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ABSTRACT

These materials were designed to help remedial students increase mathematics proficiency on topics found in the Regents Competency Testing Program. The activities developed come complete with questions, "cards," and/or sample game boards. Included in each activity is a list of materials needed. Several different activities often use the same materials with slight modifications. The materials do not include any type of evaluation or testing program, as it was felt that teachers should tie in related remedial activities with their own classroom diagnostic testing. These activities are designed to help in the remediation of mathematics, in conjunction with commercially available materials, as a supplement to the basic curriculum. A coding system listed in the table of contents is designed to identify the following specific operations and skill areas found in each activity: Place Value, Rounding, Addition, Subtraction, Multiplication, Division, Equivalent Fractions, Fraction Ordering, and Fraction Concepts (Addition, Subtraction, Multiplication, and Division). The general educational level for this set of materials is grades six through eight. (MP)

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MAKE MATH MERRY - II

An Instructional Activities Guide for Teaching Basic Math Skills in Grades: 6-7-8.

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This curriculum guide was developed during the summers of 1979 and 1980 as part of a Cortland-Madison BOCES sponsored Summer Curriculum Project.

SE 034 903

INTRODUCTION

The following materials were developed during the summers of 1979 and 1980 as a part of a cooperative curriculum project sponsored by the Cortland-Madison BOCES (joined in 1980 by members from the Oswego BOCES). The 16 participants this year represented 8 different school districts including teachers from: Cincinnatus, Cortland, DeRuyter, Hannibal, Homer, Marathon, McGraw, and Oswego. Most of these same people worked together last summer on writing activities and worksheets to be used in the remediation of mathematics. The three guides written represent a combined effort from the 1979 and 1980 workshops.

The three groups formed this year selected their own areas to work on, based on the needs of their students at that level. They were as follows:

Grades 3 - 5	Problem Solving
Grades 6 - 8	Fractions
Grades 9 - 12	General preparation for the Regents Competency Test with empahsis on per cents, consumer related math and geometry.

The main emphasis of this workshop was to develop original materials to help the remedial student increase his mathematics proficiency on the topics found in the Regents Competency Testing Program. The activities developed do not include any type of evaluation or testing program. Teachers should tie in related remedial activities with their own diagnostic testing done in the classroom.

It was the general feeling that although many teachers may have good intentions of making up an activity for their slower students to help them understand certain math concepts, they usually do not have the time to get all necessary ideas and materials together. You will find that most activities come complete with questions, "cards," and/or sample gameboards. Included in each activity is a list of materials needed. Several different activities use the same materials with slight modifications.

The coding system listed in the Table of Contents should help to identify specific operations and related skill areas found in each activity. You will also find a chart with each individual guide listing all activities with their related skill areas. Some activities were taken from DPA (Diagnostic Prescriptive Arithmetic). For a complete copy of DPA, write: New York City Board of Education, Community School District 31, Staten Island, New York 10004.

The original materials that have been developed are to be used to help in the remediation of mathematics. They should be used in conjunction with commercially available materials and are intended to supplement the basic curriculum. Although the materials have been written for remedial students, the teacher may be needed to explain the basic rules and procedures for certain activities.

We feel these activities offer a unique approach in helping the remedial student learn mathematics. We hope you will share our ideas with your students.

Annabelle Sproba
Coordinator 1980

TABLE OF CONTENTS

The following codes are used throughout:

TOPIC	CODE	PAGES
Place Value	PV	6 - 7
Rounding	RO	8 - 17
Addition	A	18 - 26
Subtraction	S	27 - 30
Multiplication	M	31 - 51
Division	D	52 - 66
Equivalent Fractions	FE	67
Fraction Ordering	FO	68 - 74
Fraction Concepts	FC	75 - 81
Fractions - Addition	F-A	82 - 94
Fractions - Subtraction	F-S	95 - 97
Fractions - Multiplication	F-M	98 - 114
Fractions - Division	F-D	115 - 128

These codes are used in the Table of Contents, and appear in the upper right hand corner of each activity page.

*NOTE: 1. For activities dealing with more than one topic all codes have been listed. (Example: Fraction Concepts using Equivalent Fractions and Addition - FC-FE-A.)

2. A-S-M-D alone are for whole numbers. FA-FS-FM-FD are all operations dealing with fractions.

Topics

ACTIVITIES	Page No.	PV Place Value	RO Round-ing	A Addi-tion	S Sub-trac-tion	M Multi-plica-tion	D Divi-sion	F Frac-tions	FC Con-cept	FE Equiv-alent	O Order ing
Reject	6	X									
Concentration	7	X									
* Pico-Foamy	8	X									
Round-O	9		X								
* Bike Hike	11		X			X					
* 25,000 Mile Race	15		X			X					
Pig	18			X							
* "87"	20			X							
Chicken	22		X								
Calorie Count	23			X							
Jack's Wild	24			X							
Addition through Palindromes	26			X							
* Double Zero	27				X						
* Subtract Away to Zero	28				X						
Minus a Hit	30				X						
Homeward Bound	31					X					
Fall Out	33			X	X	X	X				
Yahoo!	34					X					
Beat the System	36					X					
War	38					X					
Green Chimney Poker	39					X					
Multi-Bet	40					X					

*DPA Materials

Topics

ACTIVITIES	Page No.	PV Place Value	RO Rounding	A Addition	S Subtraction	M Multiplication	D Division	F Fractions	FC Concept	FE Equivalent	FO Ordering
Multiplication Race	42					X					
*Around the Country	44					X					
*Cover Up	48					X					
Multiplication Cubes	51					X					
Twenty Five	52						X				
Division Rummey	53						X				
*Divide and Conquer	54						X				
*Remainder Race	56						X				
Leftovers	59						X				
Checkerboard Math	61			X	X	X	X				
Number Scrabble	63			X	X	X	X				
M. A. D. S.	64			X	X	X	X				
Multiple Mixers	66			X	X	X	X				
Zap!	67									X	
Fraction Rummey	68									X	X
Fraction Fight	69									X	X
Basic Rollin'	70										X
Pick Pocket	73										
Sly Slide Activities	75								X		
Fraction Bingo	78								X	X	
Fraction Flip	80								X		
Geoboard Genius	81								X		
The "Pits"	82			X				X		X	
*DPA Materials											

Topics

ACTIVITIES	Page No.	PV Place Value	RO Round-ing	A Addi-tion	S Sub-trac-tion	M Multi-plica-tion	D Divi-sion	F Frac-tions	FC Con-cept	FE Equiv-alent	FO Order ing
Fraction Pitch	86			X				X		X	X
Fraction Black Jack	87			X				X			
Scorch!	88			X				X		X	
Daffy Dots	89			X				X			
Even Up	93			X				X		X	
A "Perfect Ten"	95				X			X			
Advanced Rollin'	96			X	X			X			X
J + L Country Club	98		X			X		X			
Strips	112					X		X			
Roll and Strip	114					X		X			
Plan a Party	115			X	X	X	X	X			
Fraction M. A. D. S.	117			X	X	X	X	X			
Expert Rollin'	120					X	X	X			
Hot Rolls!	122					X	X	X			

*DPA Materials

PLACE VALUE

(CODED PV)

Reject

Objective: To provide practice in reading and writing large numbers.

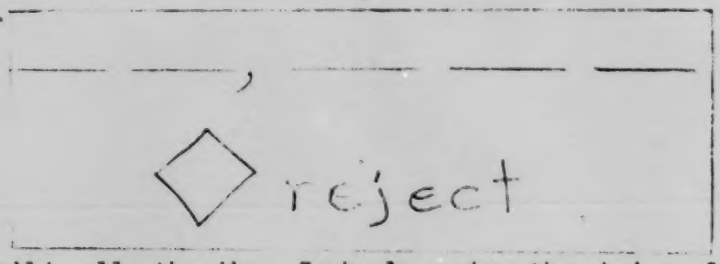
Activity: for small group or entire class.

Materials:

pencil
paper
chalkboard
die with digits ranging 0-9

Procedure:

1. Each child needs to make a diagram as shown below on his paper.



2. One child rolls the die. Each player has the choice of placing the digit anywhere in the blanks to make the largest possible number. The roller continues for five more rolls. Once a digit is placed in one of the blanks, it cannot be changed.

3. Any one of the rolls may be rejected in the diamond.

4. The winner is the child with the largest number, correctly read, and he becomes the new roller.

Variations:

1. To increase the difficulty of the game, increase the number of place value positions in the diagram.

2. Make the least possible number.

Concentration

Objective: To review place value in numeral form, expanded form, and written form.

Activity: for two students

Materials:

Square game board
16 game markers made from tag board

3000 + 90 + 6	Six hundred fifty	One million three	5 hundreds 3 tens 9 ones
6 thousand 40	705,982	40 thousand 10	50,000 + 700 + 8
539	1,000,003	3 thousand 9 tens 6 ones	40,010
Fifty thousand seven hundred eight	6,[illegible]	705 thousand 982	650

Procedure:

1. Cover each square of the game board with a marker.
2. Each student picks up any 2 markers. If the squares show the same number, the student keeps the markers. If they do not, he places the markers back on the squares.
3. The player with the greater number of markers, after all squares are uncovered, wins.

ROUNDING

(CODED R)

Pico Foamy

Objective: To reinforce place value structure.

Activity: for small group or entire class.

Materials:

chalkboard

Procedure:

1. Teacher selects a 3 digit number and writes it on a slip of paper.

2. The students try to guess the number. After each guess, the teacher gives the others clues.

3. The clues tell the others how close the guess was to the original number.

   Clues

   a. Zilch - None of the digits are in the original number.
   b. Foamy - One digit is correct, but not in the right place value.
   c. Foamy, Foamy - Two digits are correct, but not in the right place value.
   d. Foamy, Foamy, Foamy - Three digits are correct, but not in the right place value.
   e. Pico - One digit is right and is in the correct place value.
   f. Pico, Pico - Two digits are right and in the correct place value.
   g. Pico, Foamy - One digit is right and in the correct place value and one digit is correct, but not in the right place value.
   h. Pico, Foamy, Foamy - One digit is right and in the correct place value and two digits are correct, but not in the right place value.

4. The winner is the child who first discovers the number.

   Game Example: The number is 426.

Guessed number might be:	Clues:
1) 735	Zilch
2) 619	Foamy
3) 642	Foamy, Foamy, Foamy
4) 462	Pico, Foamy, Foamy
5) 426	

Variation:

1. Clue words may be given in any order.

R

Round-O

Objective: To give practice in rounding to nearest ten.

Activity: small group or entire class

Materials:

game board for each player from tag board.
markers from any suitable material
call cards should be made for any number needing rounding to the nearest ten - numbers should correspond to those on the game board.

Example: Call card 9,007 - gameboard 9,010.
20 - 25 calling card numbers chosen by the teacher and arranged in different sequence on the gameboard

9,010	660	1,520	5,200	9,007
				998
				8,911
				1,091
				655
				4,229
1,000	4,230	7,720	100	2,107
				396
				1,516
				7,720
				783
8,110	2,110	780	6,000	3,520
				3,203
				15
				6,003
1,090	400	3,520	110	112

13

Procedure:

1. Play as ordinary Bingo.

Variations:

1. To stress rounding to nearest hundred or thousand, teacher would need to make new game boards.

Bike Hike

Objectives: To provide practice for learning the multiplication facts.

To provide practice "rounding off" numbers to the nearest ten.

Activity: for a small group.

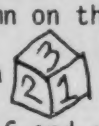
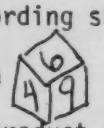
Materials:

game board made on an (15" x 20") oak tag folder
two numeral cubes numbered: 0-5 and 4-9
a different token (bike) for each child
recording sheet for each child
a number line should be available to use as a reference

NOTE: Examine the recording sheet and the game board before reading the acitivity.

Procedure:

1. Each child in turn, rolls the cubes and records the numerals in the appropriate column on the recording sheet.

   Example: Becky rolled a  and a 

   She multiplied 3 x 6 and got a product of 18, which she rounded off to 20. She placed her bike at the 20 mile mark on the game board. Her recording sheet looks like this:

BIKE HIKE

Log For: Becky (Name)

Day	Numerals Rolled	Product	Miles Travelled (Nearest Ten to Product)	Total Miles Travelled (Nearest Ten)
1	3 x 6 =	18	20	20
2	___x___ =			
3	___x___ =			

2. The activity continues as the children calculate their Total Miles Travelled after each day and move their bikes along to the appropriate "ten" on the game board.

   Example: Becky went 20 miles the first day (18 "rounded off"). On her second turn, she rolled a 2 and a 7. That day she went 10 miles more.

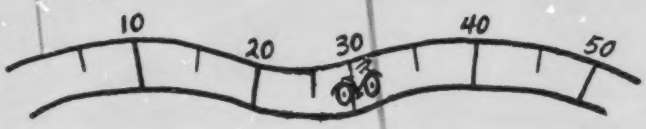
   (2 x 7 = 14, 14 rounded to the nearest ten = 10)

   She then moved her bike to 30.

BIKE HIKE

Log For: Becky (Name)

Day	Numerals Rolled		Product	Miles Travelled (Nearest Ten to Product)	Total Miles Travelled (Nearest Ten)
1	3 x 6	=	18	20	20
2	2 x 7	=	14	10	30 (20 + 10 = 30)
3	___ x ___	=			

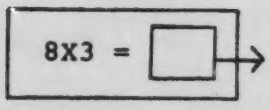


3. The first child to return HOME after going around the entire board is the winner.

Extensions:

1. The game may be played by rolling 1 cube twice thus limiting the facts being practiced.

2. This activity may be used with the entire class divided into teams. The game board could be drawn on the chalkboard. Instead of using the numeral cubes, flash cards may be substituted.



The product is "rounded off" to arrive at the distance travelled for that turn.

A team's running tally may be kept by the children either at their seats or at the board. The rules would remain the same.

3. For a more complex version of this activity see 25,000 Mile Race.

BIKE HIKE

LOG FOR: _____
(NAME)

Day	Numerals Rolled	Product	Miles Travelled (Nearest Ten to Product)	Total Miles Travelled (Nearest Ten)
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			
	___X___ =			

25,000 Mile Race

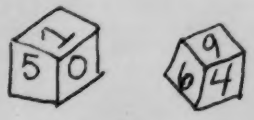
Objectives: To provide practice for multiplication of two place numbers.

To provide practice for the addition of three and four place numbers.

To provide an opportunity to use the formula Rate X Time = Distance.

To provide practice interpolating 4 and 5 place numbers on a number line.

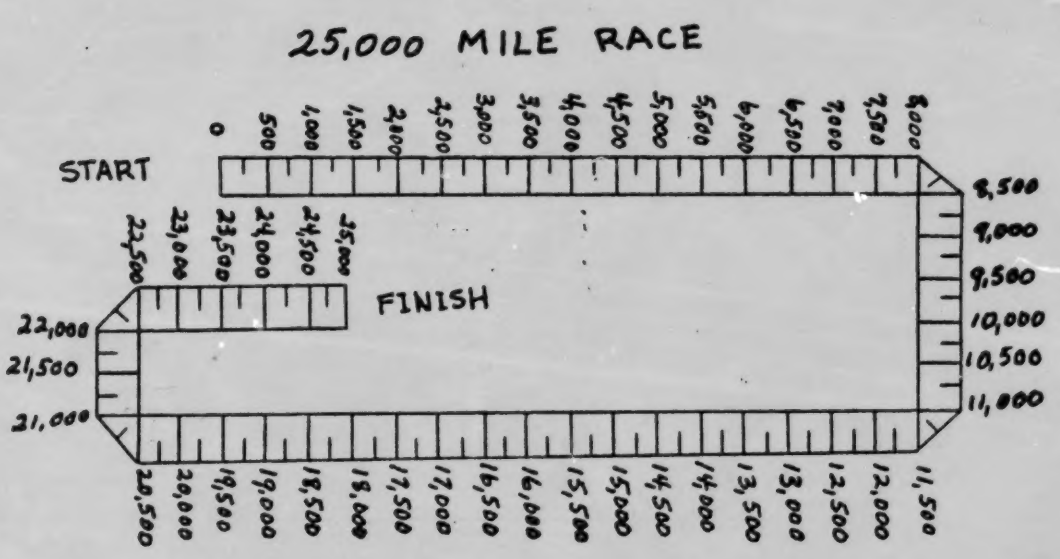
Activity: for a small group.



Materials:

game board made on (20" x 30") oak tag (see below)
two numeral cubes; one numbered 0-5; the other 4-9
a different token (car) for each child
recording sheets for each child

NOTE: Examine the recording sheet and the game board before reading the activity.



Procedure:

1. Each child, in turn, rolls the cubes, forms a two place numeral and records it in the "Rate" column on his sheet. The cubes are rolled again, and this two place numeral is recorded in the "Time" column.

   Example: Karen first rolled a 3 and a 7 and made the numeral 73. She then rolled a 2 and a 3 and made the numeral 32. Karen's rate for this trip is 73 miles per hour for 32 hours.

2. When Rate and Time have been recorded each child then multiplies to find out how far he had travelled (R X T = D).

   Example:

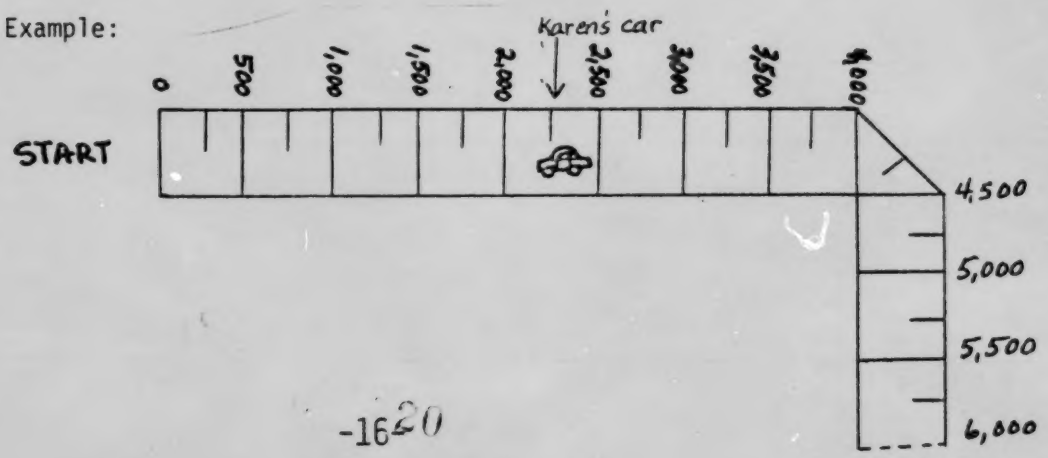
25,000 MILE RACE

Log for Karen
(Name)

Trip	Miles Per Hour Rate	X	Number of Hours Time	=	Distance Travelled	Total Distance Travelled	Work Space
1	73	X	32	=		2336	73 x 32 146 219 2336

3. The children then place their "cars" in the appropriate place on the game board.

   Example:



4. The activity continues as the children calculate their "Total Distance Traveled" after each "Trip" and move their "cars" along the board.

Example: Karen first went 2,336 miles, she was between 2,000 and 2,500 on the board. Then she went another 2,040 miles, she now may move her "car" in between 4,000 and 4.500 (2,336)
(2,040)

(4,376)

25,000 MILE RACE

Log for Karen (Name)

Trip	Miles Per Hour Rate	X	Number of Hours Time	=	Distance Travelled	Total Distance Travelled	Work Space
1	73	x	32	=		2336	73 x32 146 219 2336
2	51	x	40	=		2336 +2040 4376	51 x40 2040

5. The winner is the first child to travel (Total Distance Travelled) 25,000 miles.

Pig

Objective: Practice in basic addition facts with regrouping.

Activity: for 2 - 6 children.

Materials:

two common dice
paper
pencil

Procedure:

1. The object of the game is to obtain the highest score within a designated number of innings.

2. Each player rolls a die once. The player with the highest roll begins the game.

3. The first player rolls the dice and adds the two numbers on the dice. This player can then continue to roll to try to increase his points by adding the sum of the dice for this roll to his previous roll. When he had this total, he may wish to continue or pass the dice.

4. A player may wish to pass because a one on either of the two dice wipes out his entire accumulated score for that turn.

5. Special scoring situations are as follows:

   a. Snake eyes (two ones) = score 25 and the player may continue to roll if he wants to.

   b. Doubles (two twos) = scores double the amount of the throw.

6. Players need to keep a running total of points earned in each inning.

   Example: For 3 innings of play, the score could be as follows:

   Inning 1 - 25 points.
   Inning 2 - 0 points.*
   Inning 3 - 16 points.
   41 points (running total)

   * Remember, if a player rolls a one on either die, he loses the points he has earned for that turn only.

Variations:

1. This game may be used for subtraction using the same rules except the player would subtract the sum earned on each roll

from one hundred. The winner would then be the player closest to zero on the final designated inning.

2. This game may be used for multiplication using the same rules except the player would take the product of the dice and add the sum of the products within each turn.

NOTE: To get into higher multiplication facts, the teacher may wish to make his own dice to include 7, 8, and 9.

ADDITION

(CODED A)

"87"

Objectives: To provide practice for addition of two place numbers with exchange.

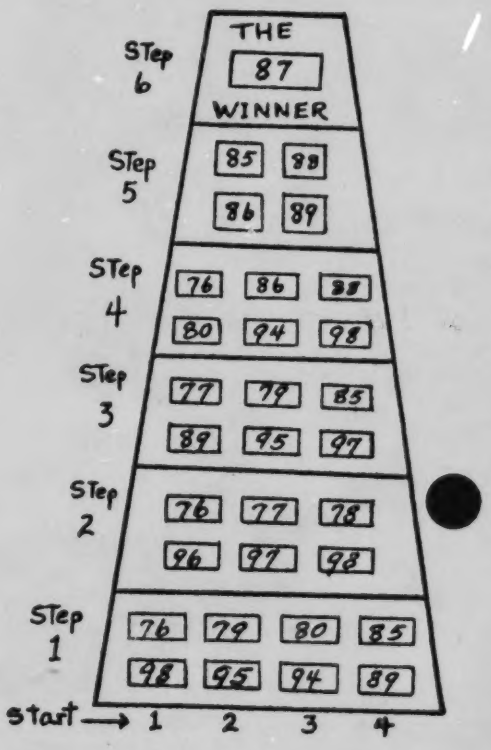
To provide practice for addition of two place numbers with zeros.

To provide practice for mental computation.

Activity: for small group.

Materials:

Game board made on (9" x 14") oak tag
2 numeral cubes (1st numbered: 28, 29, 30, 37, 38, 39) (2nd numbered: 48, 49, 50, 57, 58, 59)
tokens - a different one for each child
paper for recording for each child



Procedure:

1. The children place their tokens on "Start" on the game board. Each child, in turn, rolls the cubes and all the children add the two numbers he rolled. (These may be added mentally or with paper and pencil.)

2. If the player's sum is shown in Step 1, he may move his token to that square on the playing board. If the sum is not shown in Step 1, the child is not able to move on that turn.

   Examples:

   a. Jane rolls and . She add and gets a sum of 79. 79 is in Step 1, so Jane moves her marker to cover 79.

   b. Jack rolls and . He adds and gets a sum of 86. 86 is not in Step 1, so Jack cannot move this turn.

3. The children try to move to the next highest Step with each turn. The winner is the first child to get to "87" (Step 6).

Extensions:

1. As a variation, the last player to reach "87" (Step 6) wins.

2. Using the same format, different game boards and sets of cubes may be made to practice such skills as: subtraction with exchange (finding the difference), or multiplication of a two digit number by a one digit number.

Chicken

Objective: To practice addition with regrouping in tens place.

Activity: for 2 - 6 children

Materials:

set of 30 - 50 math problem cards
separate answer key card for each problem
pencil
paper

NOTE: In making set of problem cards; work out the answer to each problem as you make up the set because the distribution of numerals appearing in the answers is very important. No numeral should predominate, and none should be omitted from the array of answers.

Procedure:

1. Each player chooses a numeral 0 - 9 and puts it on his paper where everyone can see it. Play begins when player one draws a problem card and places it where all can see it.

2. All players work the problem. (Answer key is consulted in case of dispute.) If the player who draws the problem card makes an error in finding the sum, he loses his turn as well as any points accumulated on that turn.

3. If the first player's numeral does not appear in the sum, he receives one point and has the option to draw again - or - the player may elect to cry "chicken" and allow play to pass to the left.

4. If player One decided to continue and the chosen numeral does come up in the answer, the turn is over, and that player loses any points earned on that turn. For this reason each player should keep record of points earned by turn as well as a running total of points.

5. The winner is the first player to accumulate seven points.

Variation:

1. The game may be played to 21 by allowing students to choose the number of points 1-5, he wishes to bid on that problem. If his numeral does not appear he earns that number of points and can elect to go on or cry "chicken." If the numeral does appear he loses the points he has accumulated on that turn.

2. This game may be played using any operation.

Calorie Count

Objective: To solve problems using addition with regrouping.

Activity: for small or large group.

Materials:

any booklet that would give accurate calorie counts for foods
old magazines
glue
index cards

Procedure:

1. From old magazines, have the students cut out pictures of food and glue them on the index card. Using the calorie count booklet, have the child write the number of calories for each item of food on the card.

2. Ask the students to keep a record of what they have eaten including snacks for one school week. From this record, have the student total their daily and weekly calorie count. Discussion might include:

   a. Comparison of food calorie values
   b. Comparison of food consumed at each meal - which meal contained the most calories (least calories), etc.?
   c. Planning of a daily menu of meals they would like to eat.

Variations:

1. Actual menus can be used in planning meals; totaling costs, etc.

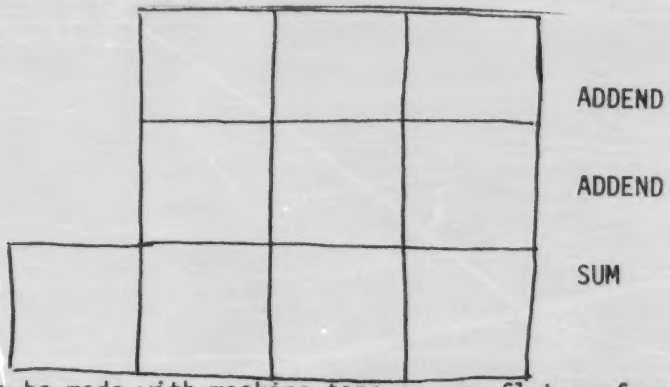
Jack's Wild

Objective: Addition with regrouping.

Activity: for 2 - 3 players.

Materials:

pencil
paper
deck of playing cards (excluding Kings and Queens)
grid made of tag board as shown below



NOTE: A grid may also be made with masking tape on any flat surface.

Procedure:

1. Teacher should designate the number of hands to be played.

2. Deal out six cards to each child. Aces represent one, tens represent zero, Jacks are wild, and all other cards represent their face value.

3. The first player places a card anywhere in the addends of the grid. The next player can also place a card anywhere in the addends. If the addends in the ones column is complete, the next player has the option of filling in the sum or filling in one of the remaining addend spaces.

4. Play then continues in this manner until the grid is completed. At the end of play each player tallies the face value of the cards remaining in his hand. Wild cards count as ten.

5. Players need to keep a running total. Winner is determined by the smallest tally count.

Variations:

1. The grid may be made with any number of addends.
2. The grid may have any number of place values.
3. This game may be adapted for the other basic operations.

Addition through Palindromes

Objective: To review and practice addition with regrouping.

Activity: for one or more students.

Materials:

paper
pencil

Procedure:

1. Discuss with the class what a palindrome is. (A palindrome is a word or number that can be read the same both forward and backward) Some word examples are: noon, dad, radar, etc. Some number examples are: 202, 585, 58185, etc.

2. Obviously not all numbers are palindromes, but you can get a palindrome from any number.

   Example: Write the number 256. Reverse the order of the digits, and write that number 652 under 256. Add the two numbers. The sum 908 is not a palindrome. Reverse these digits and add those two numbers. The sum 1717, is not a palindrome. But, reverse these gidits, add, and a palindrome will appear:

```
  256
+ 652
  908
+ 809
 1717
 7171
 8888 - Palindrome
```

3. The basic rule for converting any number into a palindrome is to add the original number to its reverse. Keep up the procedure and eventually you will get a palindrome.

4. The teacher may want to let the students know how many steps it will take to reach the palindrome. This doesn"t take the challenge out of the lesson because the actual palindrome is still to be found.

5. Telling the number of steps may eliminate frustration.

SUBTRACTION

(CODED S)

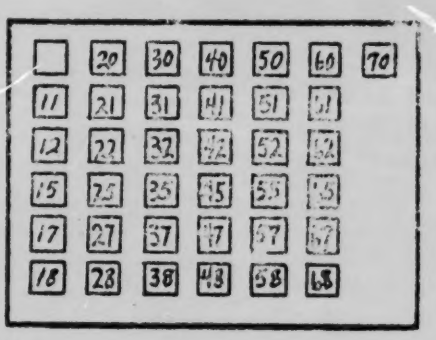
Double Zero

Objectives: To provide practice for subtraction with zeros in the units and tens places of the minuend.

Activity: for a small group

Materials:

2 numeral cubes of different colors - one representing tens, numbered: 3, 4, 5, 6, 7, 8. The other representing units, numbered 0, 2, 3, 5, 8, 9.
answer board made on (9" x 14") oak tag
tokens - about 15 of a different color for each child
paper for recording for each child



NOTE: This activity is self-checking. The child should be aware that if this number is not on the answer board then he has subtracted incorrectly.

Procedure:

1. Each child, in turn, rolls the cubes, represents a two place number and subtracts it from 100. The child then covers the number on the answer board which corresponds to his remainder.

2. If a number is covered on the answer board, it cannot be used again. A child whose answer has already been covered on the board is not able to move for that turn. (Some children might enjoy a bumping-off rule).

3. The winner is the child with the most tokens on the answer board when all the numbers are covered or when time is up.

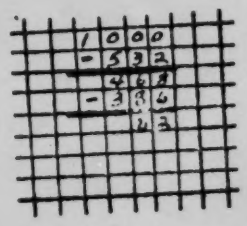
Subtract Away to Zero

Objectives: To provide practice in subtraction of two, three, and four digit numbers with exchange.

To reinforce the place value of two and three digit numerals.

To provide the opportunity for developing problem solving strategies.

Activity: for two or three children



Materials:

3 numeral cubes numbered: 0-5, 2-7, 4-9
grid paper for recording for each child
hand calculators (optional)

Procedure:

1. Each child begins the game with a score of 1,000 points which he records on his grid paper. The first one to "subtract away" all these points wins the game. The children take turns rolling the numeral cube (s), arranging them to form numerals, and then subtracting that many points from their scores. The activity continues until someone reaches zero exactly.

Example: Becky started with 1,000

1st roll 3, 5, 2.....	- 532	She arranged them to form the numeral with the greatest value.
	468	
2nd roll 8, 3, 6.....	- 386	These digits had to be arranged to make a numeral less than 468.
	82	
3rd roll 6, 4.....	- 64	Becky decided to use only two cubes.
	18	
4th roll 2, 3.....	- 0	Becky loses her turn. She is not able to form a numeral less than 18 with the digits 2 and 3.
	18	
5th roll 7.....	- 7	Becky rolled one cube.
	11	
6th roll 8.....	- 8	
	3	

WOW!! Becky's close to winning the game!

2. Rules to remember:

   a. You may use one, two or three cubes for any turn.

   b. If the digits you rolled cannot be arranged to form a number less than the points you have left, you lose your turn.

   c. The first child to reach zero exactly wins.

   These rules provide the children with opportunities to consider several possible alternatives and approaches and decide upon the one that would "probably" be the most advantageous.

Extensions:

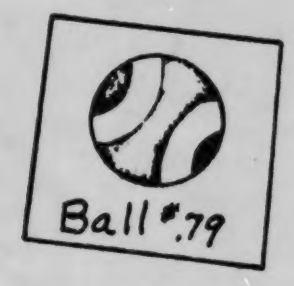
1. The game may be played starting with 100 or 10,000 points depending upon the children's readiness.

2. Instead of points, money may be used.

   Example: "You have $10,000.00 to spend." The children are given catalogs, newspapers, etc. from which they would " purchase" items until they had no money left. Cards could also be made by the teacher having a picture of an item and its cost. In this case, the children would take turns picking cards and spending their money.

   $100.00
   - 2.99 Socks for Dad

3. The reverse of this activity may be used to practice column addition. Instead of taking points or money away the children would keep adding on until they reached 1,000.



Minus A Hit

Objective: To provide practice in subtraction.

Activity: for 3 - 4 players.

Materials:

a deck of common playing cards with the four queens removed. Cards have their face value except: Aces equal 1; tens equal either 1 or 0; jacks are wild; kings equal 0.

Procedure:

1. The dealer places the first card dealt to each player face down. He then deals two more cards, one at a time, to each player face up. These two face up cards, forming a two digit number, may be rearranged according to the player's choice. These cards, however, must be used as the top number in the subtraction problem throughout the game.

2. The player should then subtract the face down card from the two cards he has arranged as his two digit number. His objective is to subtract this problem for the lowest possible number.

3. If a player decides he wants a "hit," he receives one card face down. He may now change the sequence of his numbers in either row in order to achieve the smallest difference.

4. If a player wants a second "hit," the dealer places the first card face up in the top row and a second card face down in the bottom row forming a three digit number. Players are then allowed to change the sequence of numbers in either row in order to achieve the smallest possible difference.

5. The third, and final "hit," is dealt in the same manner as the second. The winner is the player with the lowest possible difference.

6. All ties go to the dealer. If a player achieves a lower difference, he becomes the dealer.

NOTE: To make the game more interesting to students, chips may be used for betting purposes such as in blackjack.

MULTIPLICATION

(CODED M)

Homeward Bound

Objective: To provide practice using the basic multiplication facts.

Activity: for two to four children.

Materials:

standard dice
markers for each player
game board as shown (see next page)

Procedure:

1. Pupils take turns as follows: Place a marker on (5) at start. Roll the dice and find the sum. This sum is now multiplied by the (5).

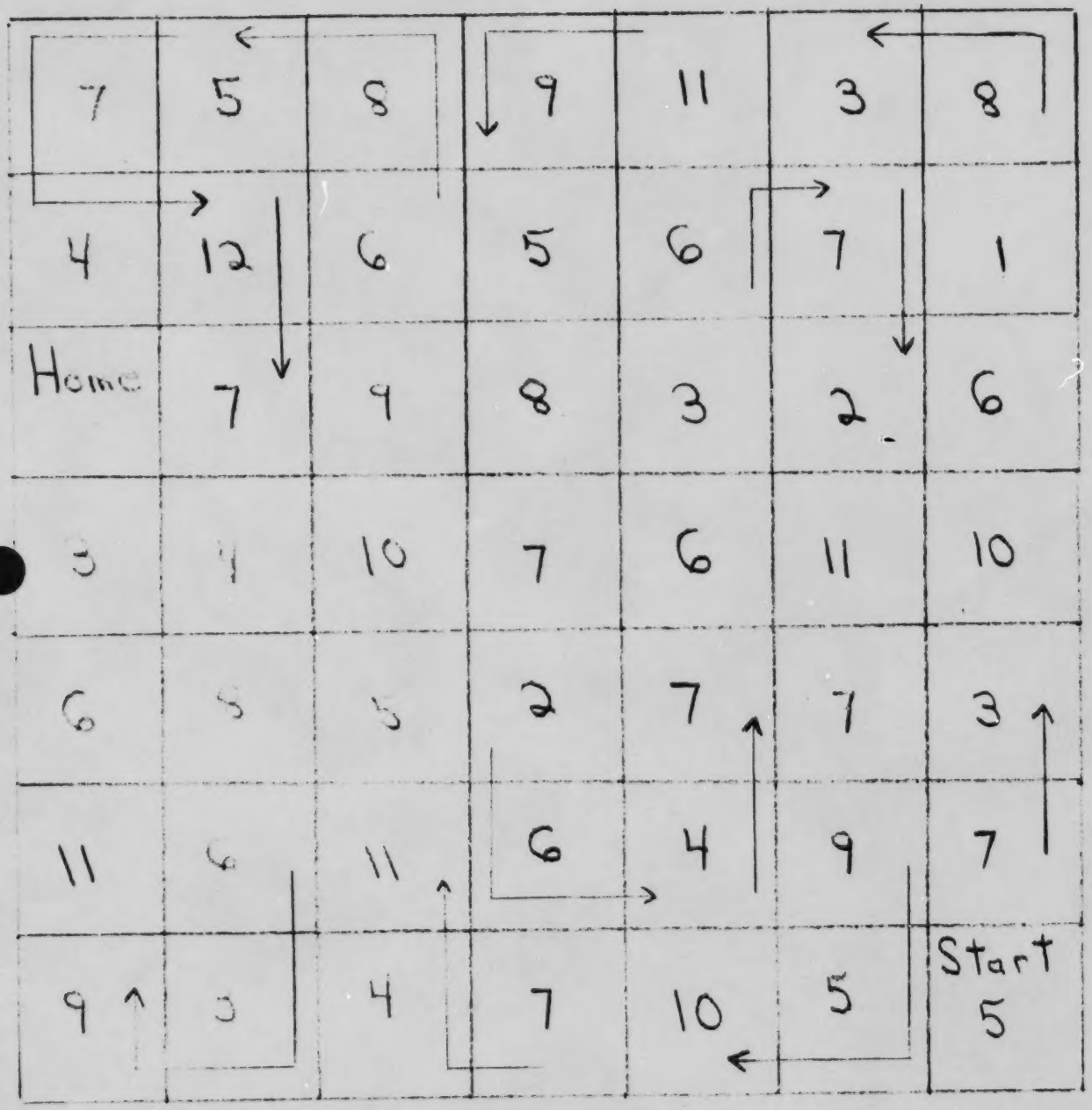
2. If the product is correct, the player moves his marker the number of spaces shown on either die. If doubles are rolled, the player moves the sum of the dice.

3. Play continues in this manner until home is reached. If a player lands on an occupied square, he can "bump" that player the number of spaces shown on the highest die.

Variation:

One die must be marked 1-6 and the other can be marked using any numbers you wish to practice.

Homeward Bound



39

Fall Out

Objective: Practice on basic facts.

Activity: for 2 - 4 children.

Materials:

timer (stop watch, sand timer)
tag board cards with basic facts - may be made in a variety of shapes such as a flying saucer, frisbee, football, tennis rackets, etc.
container with cover which can be made using a pound coffee can powdered drink can, etc.

Procedure:

1. First player shakes the container with cards. He removes the cover and spills the cards onto the table. His opponent then starts the timer.

2. In one minute, the player may pick up as many face up cards as he can, naming correct products aloud.

3. At the end of player one's turn, he keeps the correct facts he has named. All left over cards go back into the container, and player two does the same thing.

4. The winner is the player with the most cards at the end of the game.

Variation:

Basic facts in any operation may be used.

Yahoo!

Objective: Practice with basic multiplication facts.

Activity: for two children.

Materials:

the winning touch game board may be used for this game also
score sheet for each student
2 dice
multiplication fact chart
a set of bonus cards from colored construction paper with the following facts on them:
7 x 2 through 7 x 9
8 x 2 through 8 x 9
9 x 2 through 9 x 9

Procedure:

1. Each player rolls the dice in turn. The two numbers shown on top indicate the factors. If the player knows the product, he records it on the chart.

2. Except for the doubles facts, each product may be recorded in one of two possible places. If a player rolls a double, he gives the product and writes the answer on the chart. If correct, he selects a bonus card from the pile, gives its product, and records the answer on the chart.

3. When a player completes a row (vertical, horizontal, or diagonal), he earns a "yahoo."

4. A game consists of twenty turns for each player, and ten points are awarded for each "yahoo." The objective is to earn the most points in the game. A "yahoo" may also be earned by completing any three consecutive bonus squares.

Variation:

Adapt to drill with addition facts.

Yahoo
Record Sheet

Turns			
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	
Sum		+	

= ☐ Total

☐ Bonus

☐ Yahoo

☐ Final Total

Beat the System

Objective: Practice with multiplication facts.

Activity: for one child.

Materials:

61 playing cards, five each of the numerals 1-9, ten wild cards, six cards with the letters S.Y.S.T.E. and M
card on tag board or ditto
markers (beans, chips, buttons)

Procedure:

1. The player shuffles the cards. He turnes the top card over. He then turns the second card over and multiplies for a product. He places a marker over the product on the game board. Then he turns the third card over and multiplies it with the number on the second card that had been turned over.

2. Wild cards may be used as any number. If two letter cards are turned in succession, the child places a marker on only one letter on the game board. He continues in this manner until he has used his card pile.

3. If he needs to, he may then reshuffle the deck and go through it a second time.

4. Winning means covering all the products on the board before "System" is covered.

Variation:

1. The player shuffles the 61 cards and places them face down in an array. Then the player may turn over any two cards, cover their product with a marker, and turn the cards back over for reuse. Wild cards may be used only once and then removed.

2. In this version the player can make use of memory to help find needed combinations instead of relying on luck.

1	2	3	4	5	6
7	BEAT THE SYSTEM!			8	9
10				12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81
S	Y	S	T	E	M

War

Objective: Practice in basic multiplication facts.

Activity: for three children.

Materials:

deck of playing cards - face cards may equal 0, 11, or 12, aces equal 1.

Procedure:

1. Cards are shuffled and two players receive 26 cards each. The third child will act as the judge.

2. From his pile, each player turns over one card at the same time. The first player to call out the correct product keeps both cards.

3. If a player makes an error according to the judge, the other player keeps the cards. In case of a tie, according to the judge, each player keeps his own card.

4. If the two factors are alike (5x5), the players put two more cards on top. The player who then gives the correct product first, keeps all four cards.

5. Play continues in this manner until one child has all the cards.

Variation:

This game may be used with addition facts.

Green Chimney Poker

Objective: Practice in basic multiplication facts.

Activity: for two to four players.

Materials:

ordinary deck of playing cards
paper
pencil

Procedure:

1. Seven cards are dealt to each player and the remaining cards, placed face down, forming a drawing pile.

2. The first player leads a card face up on the table, thus starting a playing pile. Each succeeding player in his turn plays a card on the playing pile, but when he plays the card he must multiply the number on his own card by the number on the card that is face up on the playing pile.

3. If he multiplies correctly, the player will have gotten rid of one card and the play goes to the next turn. If he makes a mistake in multiplication, he must take the card back and pick up an extra card from the drawing pile.

4. All number cards stand for the number that is written on them and face cards are valued as follows: a jack is 11, a queen is 12, ace is one, and a king is 0.

5. Three or more of a kind and a run of three or more cards of the same suit are free discards at the beginning of a players turn.

6. The player who first disposes of all of his cards wins the hand.

7. Points can be scored in one of two different ways: the winner of the hand can get credit for all the points held by the other players when the hand ends, in which case a high score is the goal of the game. Or, when a player goes out, the other players can be penalized the number of points they hold in their hands. In the latter case, a low score is the goal of the game.

Variation:

Change the value of the face cards as follows: king as 13 and ace as 14.

Multi-Bet

Objective: To provide practice in multiplication facts.

Activity: for 4 - 9 children.

Materials:

2 dice marked 4, 5, 6, 7, 8, 9
supply of counters - poker chips, bottle caps
game board (see next page)

Procedure:

1. Each player begins with 15 - 20 chips. One player or the teacher acts as the "House."

2. In each round players place their chips on the chosen numbers or groups of numbers. They may bet on one number, two adjacent numbers, four adjacent numbers, or four numbers in a row, eight numbers, or ten numbers. The placement of the chips for the different combinations is indicated on the gameboard.

3. One player then rolls both dice and calls out the product. The "House" pays off any winning bets and/or collects any losing bets. If the called product is incorrect, the "House" wins all bets.

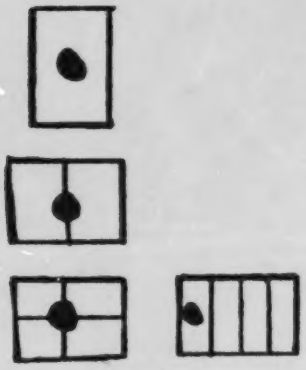
4. The player with the greatest number of chips at the end of playing time is the winner.

5. Should a player lose all of his chips before the game is over, then he is out of the game or loans can be made.

Extensions:

For older children the game can be used to study simple probability. The chart can be used to discuss questions such as: which numbers are most likely to occur? How were the various odds chosen?

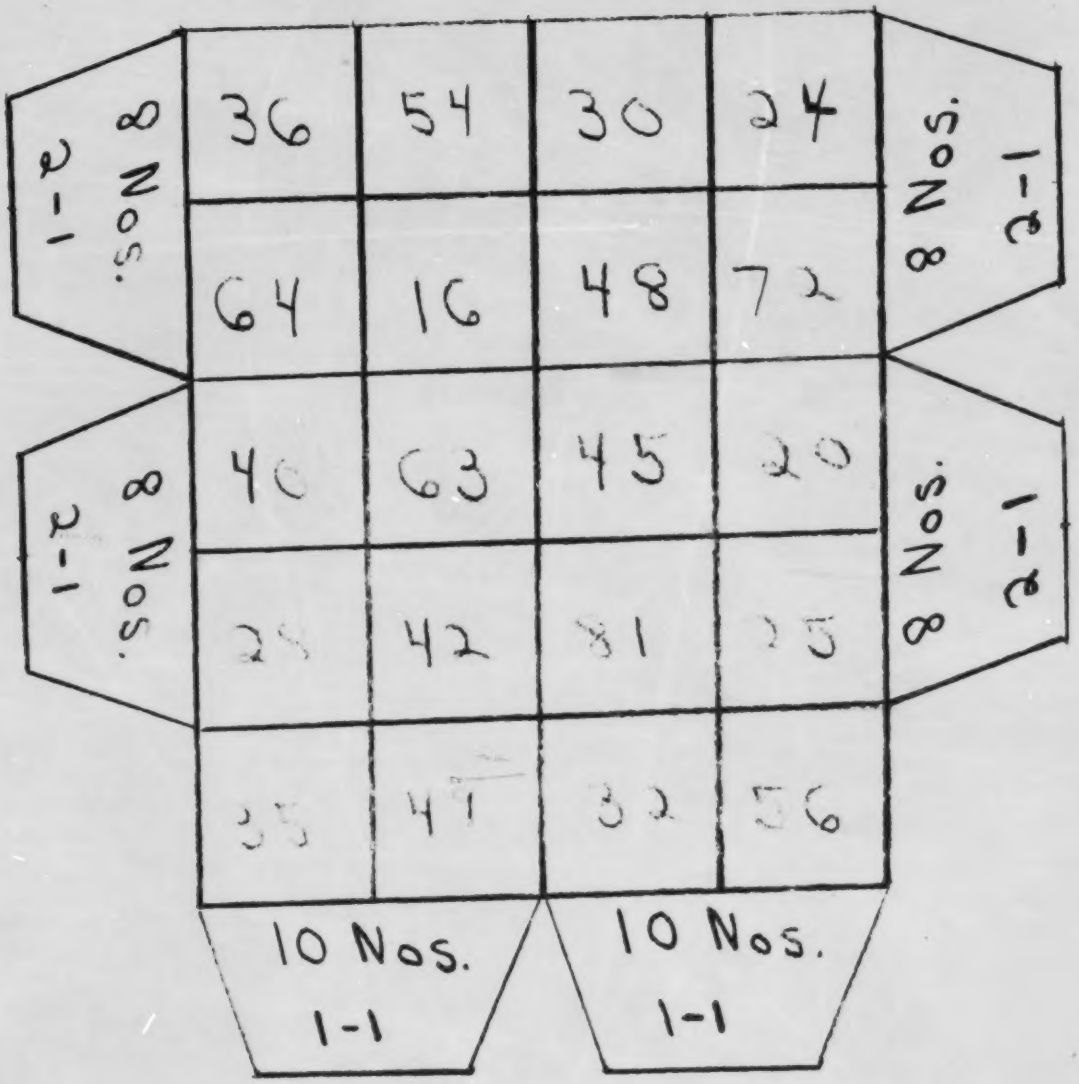
Multi-bet



One Number 15-1

Two Numbers 7-1

Four Numbers 4-1



Multiplication Race

Objective: To provide practice in finding the products of basic facts, 1-digit and 2-digit factors, products in which 10 or a multiple of 10 is one factor, products of a 1-digit and a 3-digit factor, products of two 2-digit factors, and products of a 2-digit and a 3-digit factor.

Activity: for pairs of children.

Materials:

3" x 5" index cards, 6 to 10 of each type of exercise for each game board. The reverse should be numbered on a rating scale according to the type of multiplication.

Example:
1 - basic multiplication fact.
2 - products of a 1-digit and a 2-digit factor.
3 - products in which 10 or a multiple of 10 is one of the factors.
4 - products of a 1-digit and a 3-digit factor.
5 - products of two 2-digit factors.
6 - products of a 2-digit and a 3-digit factor.

game board on tag board (see next page)
two markers

Procedure:

1. Children play the game in pairs.

2. Shuffle the cards and stack them with exercise up. Players take turns drawing the top card from the pile and completing the exercise.

3. The other child checks the product. If it is correct, the player moves a marker forward the number of spaces shown on the back of the card. If the product is not correct, the player must move back the number of spaces shown on the card.

4. A child must land exactly on "Finish" to win the game.

Multiplication Board Game

Start

Finish

50

51

Around the Country

Objective: To provide practice for learning the multiplication facts (1-11)

Activity: for small group.

Materials:

game board made on (15" x 18") oak tag (See next page)
two numeral cubes each numbered 1 - 6
a token for each child
recording sheet for each child
a multiplication facts checkboard (optional)

Procedure:

1. The children place their tokens at START on the game board. Each child, in turn, rolls the cubes and multiplies the numbers that turn up. This computation is then recorded. If this product is shown in the first circle (New York), the child may move his token there; however, if it is not shown the child must remain at START.

   Example: Arlene rolls 6 and 5 . She says and records, "6 X 5 + 30". 30 is in the first circle (New York) so Arlene moves her token to cover 30.

   Brad rolls a 6 and 4 . He multiplies and gets a product of 24. 24 is not in the first circle so Brad cannot move on this turn.

2. The children must visit each state along the way.

3. No state (circle) may be skipped.

4. The winner is the first child to get through all nine circles to FINISH.

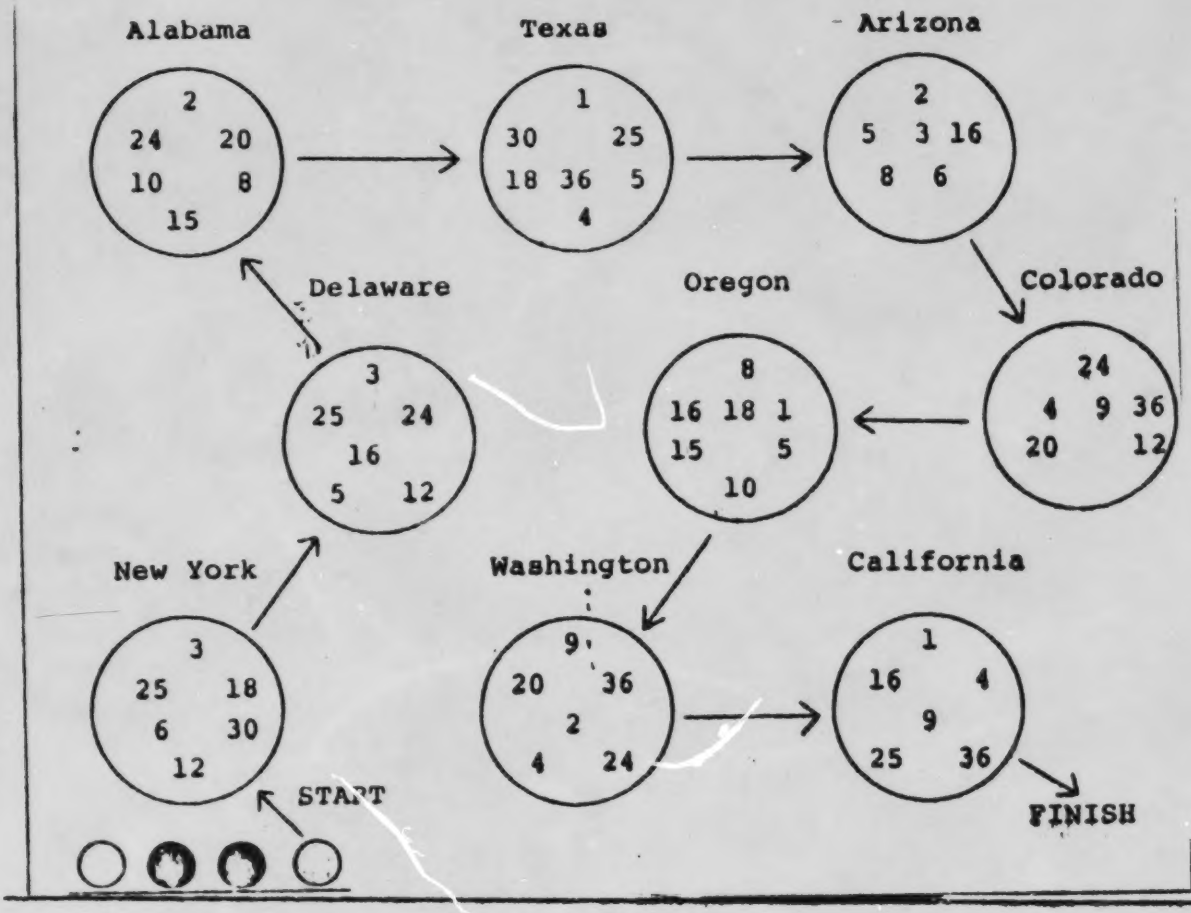
Extensions:

1. Use 2 cubes each numbered 3 - 8 for AROUND THE WORLD. (See next page.)

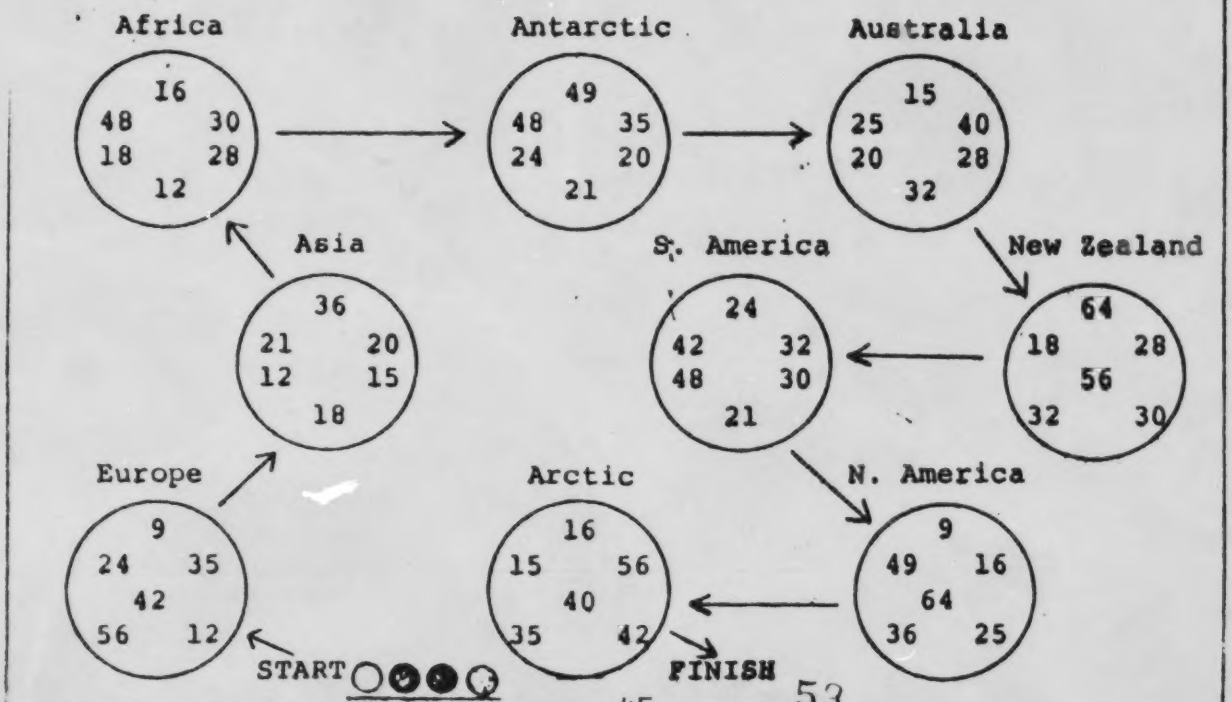
2. Use 2 cubes each numbered 6 - 11 for AROUND THE UNIVERSE. (See page 36.)

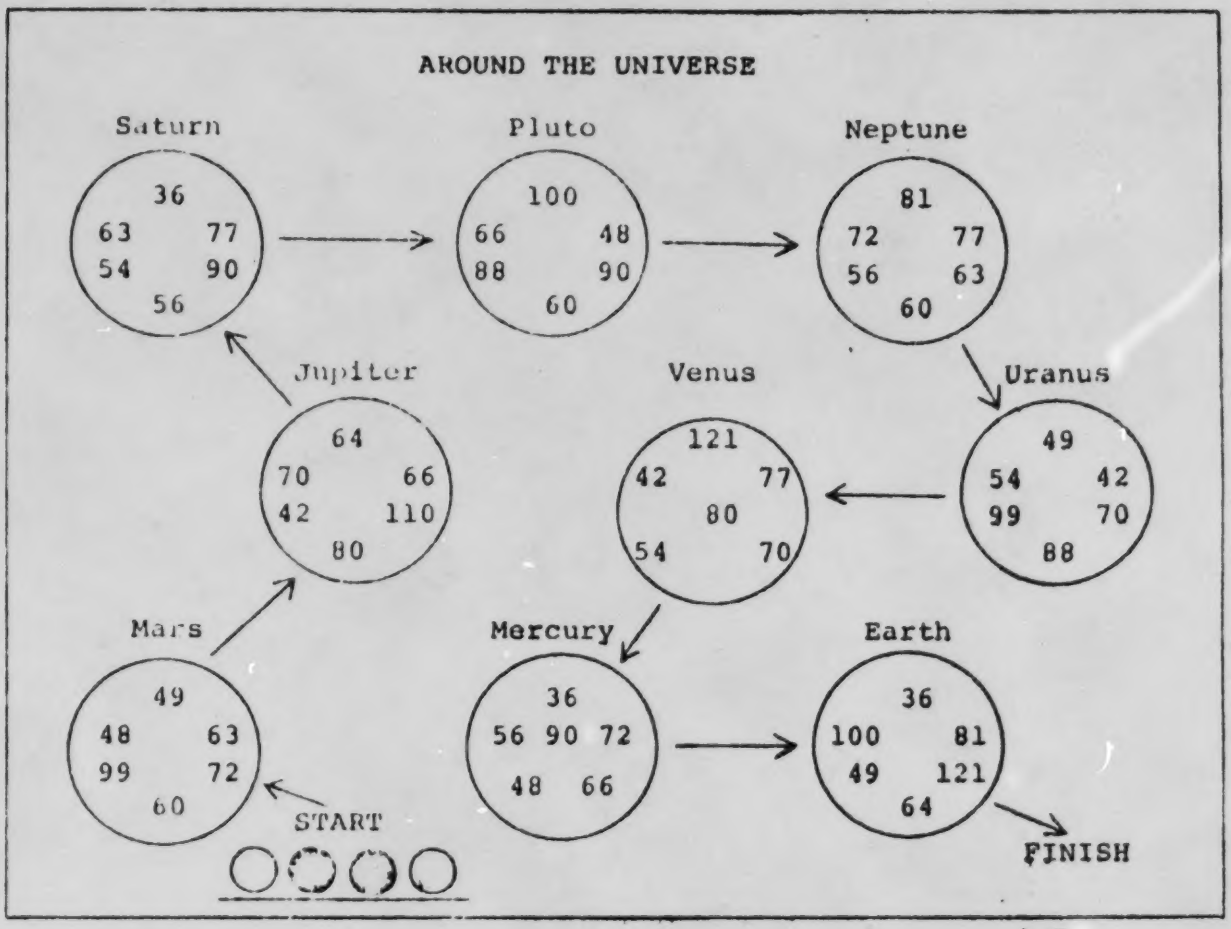
3. By changing the numerals on the game board and on the cubes this activity may also be used to practice various addition and subtraction skills.

AROUND THE COUNTRY



AROUND THE WORLD




AROUND THE UNIVERSE
Saturn
36
63 77
54 90
56
Pluto
100
66 48
88 90
60
Neptune
81
72 77
56 63
60
Uranus
49
54 42
99 70
88
Venus
121
42 77
80
54 70
Mercury
36
56 90 72
48 66
Earth
36
100 81
49 121
64
FINISH
Jupiter
64
70 66
42 110
80
Mars
49
48 63
99 72
60
START

AROUND THE _____

NAME _____

_____ x _____ = _____	_____ x _____ = _____
_____ x _____ = _____	_____ x _____ = _____
_____ x _____ = _____	_____ x _____ = _____
_____ x _____ = _____	_____ x _____ = _____
_____ x _____ = _____	_____ x _____ = _____
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Cover-Up

Objectives: To provide practice for learning the basic multiplication facts.

To provide practice for multiplication of two-digit numbers by one-digit numbers.

To reinforce the notions of commutativity and associativity.

Activity: for a small group.

Materials:

gameboard made on (9" x 14") oak tag
3 numeral cubes each numbered 1-6
tokens - 15 of one color for each child
recording sheet for each child

1	2	3	4	5	6	8	
10	12	15	16	18	20	24	2
27	30	32	36	40	45	48	5
54	60	64	72	75	80	90	9
100	108	120	125	144	150	180	21

Procedure:

1. Each child, in turn, rolls the cubes, records the three numerals on his sheet and then multiplies them.

   Example: Steve rolled: 4, 3, 5

   He records - 4 X 3 X 5 = 60

   or 3 X 4 X 5 = 60

   or 4 X 5 X 3 = 60

   and so on.....

2. If the other children agree with his multiplication, Steve may place one of his tokens on the 60 of the game board. If 60 has already been covered, he must pass.

3. The activity continues with the children rolling the cubes, recording, multiplying, and then covering the products on the game board.

4. The game ends when all the numerals on the board are covered or when time is up.

5. The winner is the child displaying the most tokens on the board.

Extensions:

1. This acitivty may be used to practice simpler or more complex multiplication by changing the numerals on the cubes and changing the products on the game board.

2. The winner may be the first child to get three markers in a row, column or diagonal.

COVER-UP

NAME_____

___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___
___	x	___	x	___	=	___	___	x	___	x	___	=	___

Multiplication Cubes

Objective: To provide practice in computing the product of two 2-digit numbers.

Activity: for pairs of children.

Materials:

color coded number cubes (for example, red cube represents tens, blue represents ones - four cubes for each pair of children)

Procedure:

1. Children will work in pairs. They will each roll the cubes at the same time (four cubes).
2. The children will then find the product.
3. The first child to find the correct product of two 2-digit numbers, earns a number of points equal to the product.
4. The point total or number of rolls can be set by the teacher.

Variations:

To modify this activity, a third color coded cube may be added to represent hundreds. Children then roll the cubes and find the product of the two digit number and the three digit number represented.

DIVISION

(CODED D)

Twenty-Five

Objective: Practice in basic division facts with remainders.

Activity: for 2 - 4 children.

Materials:

1 die, numbered 4, 5, 6, 7, 8, and 9
2 dice with the following numbers: 17, 19, 22, 23, 26, 29, 31, 33, 34, 37, 39, and 41
paper
pencil

Procedure:

1. Taking turns, students roll all three dice. They must then divide the divisor into one of the dividends.

2. The student would then record the remainder and pass the dice to the next player. Repetition of divisors and dividends is not allowed. The student would have to use the second dividend or lose his turn to the next player.

3. The first student to have his or her remainders total 25, wins.

Division Rummy

Objective: To promote rapid recall of division facts.

Activity: for two to four students.

Materials:

50 blank playing cards (or cut 3" x 5" index cards in half) Write basic combinations on 25 of them and quotients on the other 25.

Procedure:

1. The dealer shuffles the cards and deals seven to each player. He places the remaining cards face down in a pile and turns over the top card.

2. Players check their cards for matching division combinations and quotients. All matching pairs are placed face up on the table in front of the players who had them.

3. The player to the left of the dealer then takes either the turned-up card or draws one from the pile. If he obtains a matching card, he lays the pair down. In any case, he must also discard a card and put it face up beside the pile.

4. Play continues with the next student to the left repeating the process. Should he want a card below the top one in the discard pile, however, he must take all the cards above it also. The game continues until one player is rid of all his cards.

5. A point is scored for each matching pair that a student has. The winner is the player with the most points after a given time period or number of rounds.

Variations:

Rummy can also be played for addition, subtraction, and multiplication combinations and their answers.

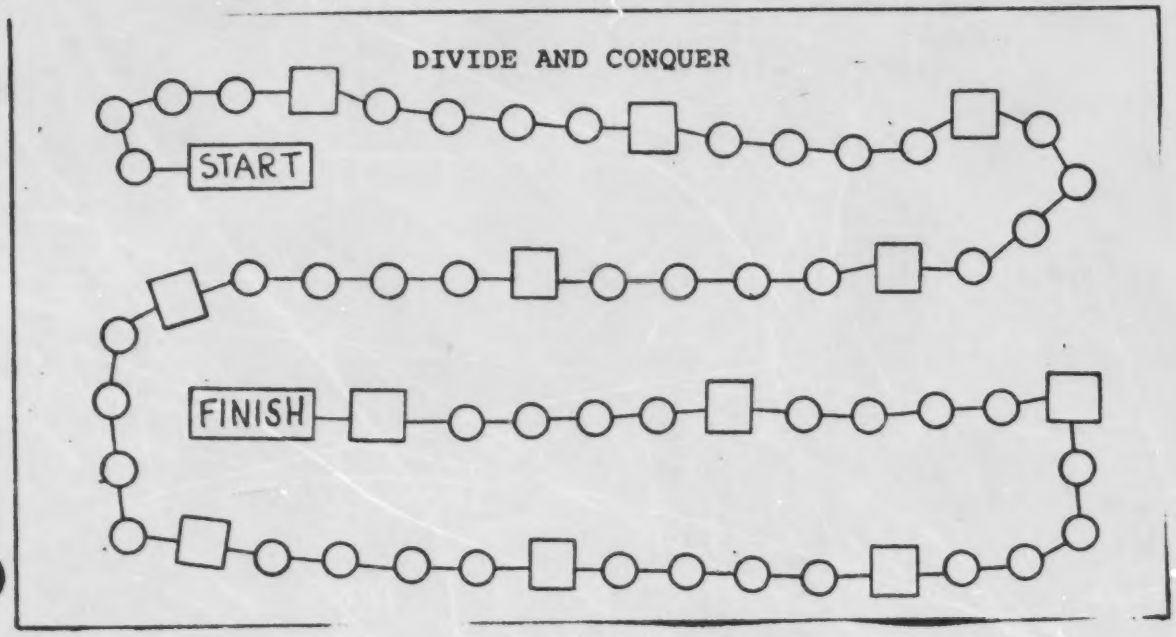
Divide and Conquer

Objective: To provide for learning the basic division facts.

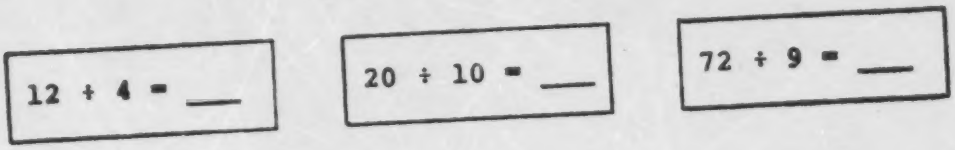
Activity: for a small group

Materials:

game board made on (15" x 18") oak tag.



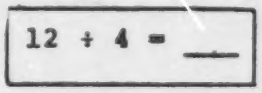
set of 50 (2" x 3") oak tag cards each with a different incomplete division sentence



two tokens of the same color for each child
a multiplication/division fact chart (tables) may be available for verifying answers

Procedure:

1. The cards are mixed and placed face down on the table. Each child, in turn, takes the top card from the pile, shows it to the group and then completes the division sentence. If the other players agree with the answer, the child may move his token or tokens a total of that many spaces.

   Example: Ann selects 

   from the top of the pile.

she says "12 divided by 4 is 3."

If the children agree with her response, she may move one of her tokens 3 spaces or she may decide to move one token 2 spaces and the other 1 space.

2. A child may send an opponent's token back to START by landing on the same space. The winner is the first child to get <u>both</u> tokens <u>exactly</u> to FINISH.

<u>Extentions</u>:

1. This activity may be used to practice the facts for any of the four operations.

   Example: multiplication.

10 X ___ = 50

___ X 6 = 48

2. The squares on the game board may contain various messages:

   a. safety squares
   b. go back to START
   c. advance 3 spaces, etc.

Remainder Race

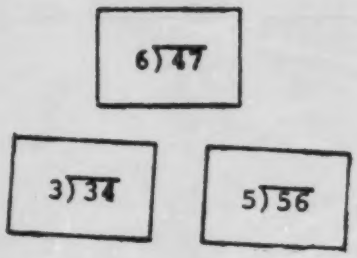
Objective: To provide practice dividing two place numbers by one place numbers.

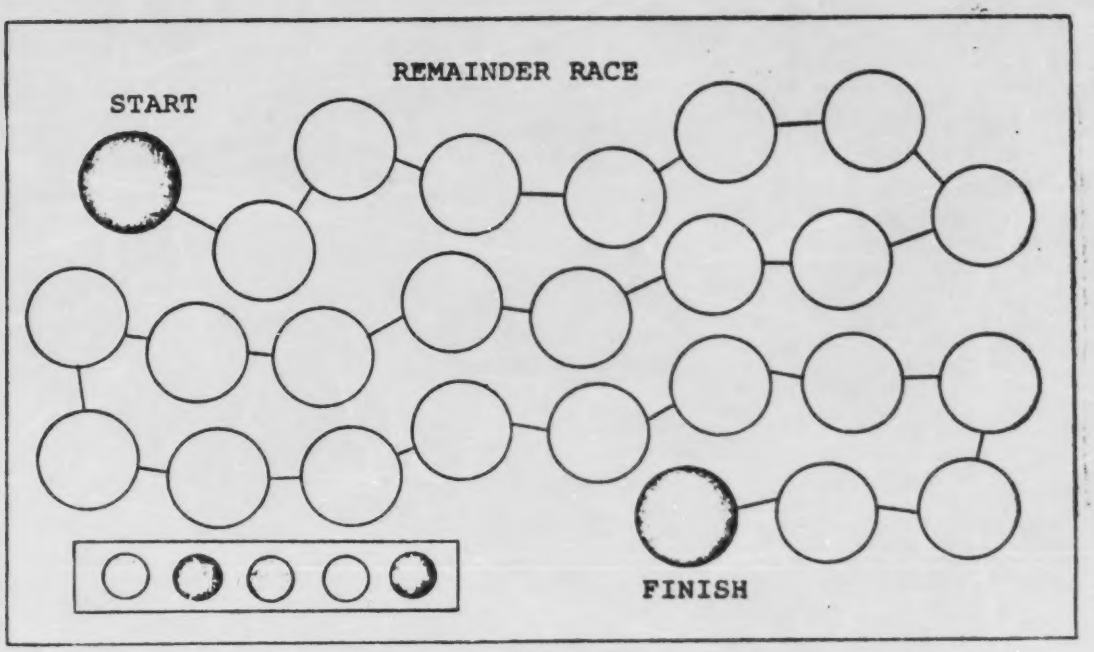
To provide practice with division problems involving remainders.

Activity: for a small group.

Materials:

gameboard made on (15" x 18") oak tag
set of 35 (3" x 2") oak tag cards
each having a division problem with a two-place dividend and a one-place divisor; at least 25 of these should involve remainders
a different token for each child
recording paper for each child





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Procedure:

1. The cards are mixed and placed face down on the table. Each child, in turn, takes the top card from the pile, shows it to the group and computes the problem orally. The other children record the problem and check the answer. If the correct quotient has a remainder the child may move his token that number of spaces.

   Example: Marie's card is $8\overline{)74}$

   She says, "74 divided by 8 is 9 (sets of 8) with a remainder of 2 ones."

   Marie then may move her token 2 spaces along the board.

2. The cards are placed at the bottom of the pile after they have been used.

3. If a child gives an incorrect answer he may not move for that turn.

4. The winner is the first child to reach the FINISH.

Extensions:

1. The level of sophistication for this activity can be varied by developing cards appropriate to the skill needed to be practiced.

   Example:

   a. simple facts

   $4\overline{)15}$ $2\overline{)9}$ $3\overline{)11}$

   b. division by 10's

   $10\overline{)47}$ $10\overline{)105}$ $10\overline{)242}$

   c. division of 3 place dividends by 2 place divisior

   $25\overline{)382}$ $31\overline{)315}$ $16\overline{)145}$

   In this case shildren may use pencil and paper to compute.

Left Overs

Objective: To practice division using a one place divisor.

Activity: for 3 - 8 players.

Materials:

three dice (each a different color)
one die should be marked 4-9 and represent the digit in the hundreds place; one die marked 0-5 and represent the digit in tens; one die marked 4-9 and represent the digit in the ones place
recording sheet (see next page)

Procedure:

1. One student or the teacher is designated as the roller. He then rolls all three dice to form a three digit number.

2. Each student must then decide to place this number somewhere in the space labeled dividend on the recording sheet. The number will be next to a divisor.

3. After performing the division, the remainder will be the score for that round and should be placed in the remainder column.

4. The object is to get the highest total in the remainder column after using all of the divisors.

Variations:

1. Divisors may be changed to include 2-digit numbers.

2. At the beginning of each round a designated roller rolls a number that will serve as a dividend for each player during that round. To obtain the divisor each player rolls his own dice. Score is kept as explained above.

Left Overs

Divisor	Dividend	Remainder
	Total	

Checkerboard Math

Objective: Reinforcement in multiple number operations.

Activity: for two children.

Materials:

common checkerboard with problems involving the 4 operations placed in the black squares. Problems may be placed in the black squares using masking tape or some other type of label.
checkers - each checker should be labeled with a 2-place number
calculator - can be used for checking answers

Procedure:

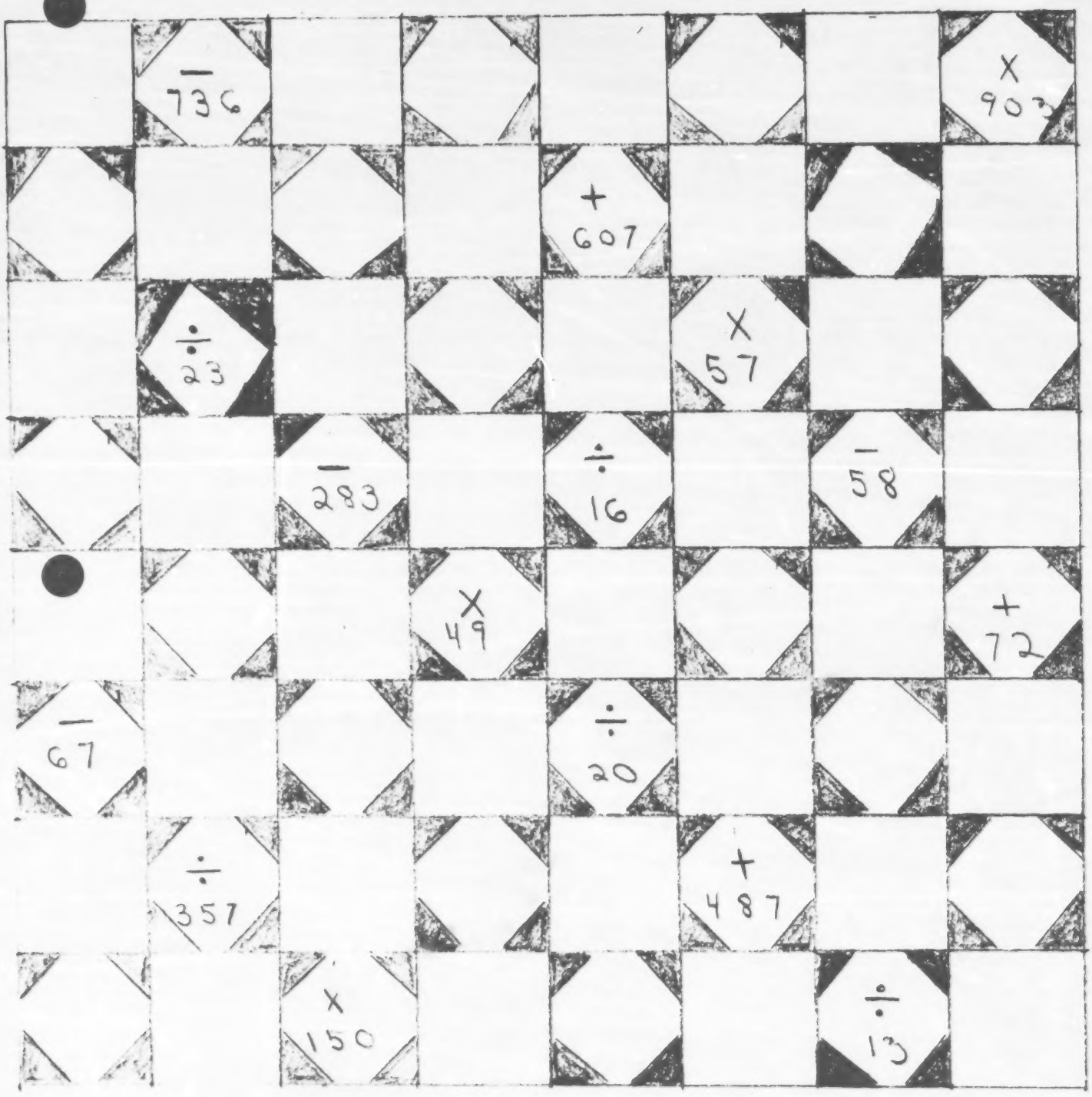
1. Checkerboard Math is played with exactly the same rules as standard checker game with one exception. A player cannot jump or move to a square having a problem on it unless the problem is answered correctly.

2. If there is a dispute, the calculator can be used to verify the answer. If a subtraction or division problem is encountered the lower number is always subtracted from the higher number or in division the lower number is the divisor.

3. When a player earns a king, he can select any one of his previously captured checkers, taking their sum as the new number to be used to perform all operations.

Variations:

1. One operation could be used rather than a mixture.



42 98 26

Number Scrabble

Objective: To provide practice in multiple number operations.

Activity: for two children.

Materials:

common deck of playing cards. Face value of card except:
ace = 1; king = 0; queen = 12; jack = 11.
pencil
paper

Procedure:

1. This game is played in a manner similar to the commercial game of "Scrabble" in that a player attempts to complete combinations of numbers (instead of letters) equaling a designated sum such as 5 or 10.

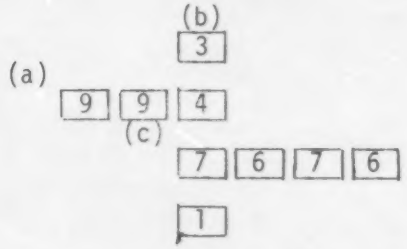
2. Each player receives 5 cards from the deck. He may attempt to make the combination of cards equal the designated sum using any combination of arithmetical processes. Each time a player successfully combines the cards, he receives a chip (or point) and draws the appropriate number of cards from the deck to replace those he has just used. (For example, if he used three cards, he draws three cards.)

3. After all the cards have been removed from the deck, the student with the most chips (points) is declared the winner.

Example:

Sample Combinations

a) (9 x 9) + 4 = 85 Designated number is 85.
b) (3 x 4 x 7) + 1 = 85
c) (7 + 6) x 7 - 6 = 85



NOTE: To introduce the game, a lower designated number would be easier to work with.

M. A. D. S.

Objective: Reinforcement in whole number operations.

Activity: 2 - 4 children.

Materials:

paper
pencil
3 common dice
activity sheet or gameboard
different colored markers for each player

Procedure:

1. Each player throws three dice, then uses the three numbers to make any number on the playing board. Any operation or combination of operations may be used.

2. When a player makes a number, a marker is placed on the board and the player scores the points covered. A number can be covered only once.

3. If the box of the marked number touches any box with any of that players markers already on it, five extra points is scored for each box touched.

4. Players take turns until the gameboard is covered. Player with the highest score wins.

Variations:

1. Enlarge the board

2. Use four dice instead of three.

3. Add a "Challenge" rule. If a player feels that another player did not make the move that scored the most possible points, a challenge may be made. The player does not change the move, but the challenger gets the additional extra points the better move would have earned.

M. A. D. S.

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39

Multiple Mixers

Objective: Practice in multiple operations.

Activity: for 3 - 4 students.

Materials:

Common deck of cards with kings, queens, and jacks removed. Ace equals one and tens are 0 or 1. All other cards have face value.
two dice marked with signs of operations (+, -, x, ÷)
paper
pencil

Procedure:

1. The dealer rolls the dice. The operations that appear on the dice are the only operations that may be used for that round. The dealer then deals the first card down to each player and then one card face up to each player.

2. At this point, the dealer has the choice of turning face up one card for a one digit number or two cards for a two digit number in the center of the table.

3. The object now is for each player to get as close to the center number as possible. He does this by using the operation signs that were previously rolled with the cards that the player holds. Each card is considered a single digit number.

4. After considering his cards and operations, the player may take a "hit" to improve his chance of achieving the designated number. A player may also request a second and/or third hit.

5. When each person has been allowed this process ("hits") they reveal their number and the process by which they achieved it. The winner is the player who came the closest to the designated number.

Variation:

This game may be increased in difficulty by using a three digit center number.

EQUIVALENT FRACTIONS

(CODED FE)

Zap!

FE

Objective: To recognize equivalent fractions.

Activity: For 4 students.

Materials:

Deck of 76 playing cards. These should be labeled 1/2, 2/2, 1/3, 2/3, 3/3, 1/4, 2/4, 3/4, and 4/4. Continue this pattern using the denominators of sixths, eighths, ninths, twelths, and eighteenths. Four wild cards are needed that allow a player to choose a new denominator. These cards should be labeled with the name of the game - ZAP!

Procedure:

Dealer deals 7 cards to each player. The balance of the deck is turned face down with one card turned up. Player on the left begins by matching suit (same denominator) or one of the equivalent value to the top card or a wild card which can be renamed to any suit the player wishes. If the denominator is changed at any time, the direction of play is reversed. Anytime a card is played that is equal to one (ex. 7/7, 4/4), the next player must take a card from the deck and lose his turn. If a player can't play, he draws one card from the deck and loses his turn. If a player can't play, he draws one card from the ceck - if this can be played you do so. The player to get rid of all his cards first wins.

NOTE: Typical Hand -

Dealer turns up 1/4. Next player plays 2/4. Next player 3/6 (equivalent fraction) - reverse direction of play. Next player 5/6. Next player wild card - renames to eighths - reverse direction of play. Next player 2/8, etc.

Variation:

Rules remain the same with the following exception. A player may change any card to find common denominators. Ex. The card down may be 3/18. The player has 4/6 in his hand. He may play 4/6 card because 4/6 = 12/18 which has the same denominator suit as the down card.

FRACTION-ORDERING

(CODED FO)

Fraction Rummy

Objective: To provide practice in recognizing equivalent fractions and ordering common fractions.

Activity: For 4 to 5 students.

Materials:

Playing deck of 76 cards from ZAP! Game.

Procedure:

1. The dealer shuffles the cards and deals seven to each player. He places the remaining cards face down in the pile and turns over the top card.

2. Players check their cards for matching sets of common fractions (Ex. 2/5. 3/5. 4/5) and for sets of equivalent fractions (Ex. 1/3, 2/6, 3/9).

3. The player to the left of the dealer then takes either the turned-up card or draws one from the pile. If he obtains a matching card, he lays down his set. A set consists of three or more cards. In any case, he must also discard a card and put it face up beside the pile.

4. Play continues with the next student to the left repeating the process. Should he want a card below the top one in the discard pile, however, he must take all the cards above it also. The game continues until one player is rid of all his cards.

5. To score, all cards are worth 5 points except wild cards (ZAP!) which are worth 15. Any cards remaining in a player's hand are deducted from his score. Play can be continued to any designated points (Ex. 200).

Fraction Fight

Objective: To compare two common fractions and equivalent fractions.

Activity: 2 players

Materials:

76 cards used from ZAP! activity minus the wild cards.

Procedure:

Cards are shuffled and dealt between the two players face down. From this pile each player turns over one card at a time. The player with the greater fraction wins the two cards. Play continues until one player has all the cards or for a designated amount of time. The winner is the player with the greatest number of cards.

NOTE: To make this game easier remove the twelfths and eighteenths.

80

Basic Rollin'

Objective: To compare fractions

Activity: Any number

Materials: Pencil
1 Common Die
Game sheet (see illustration)

Activity One - Procedure:

1. Roll the die. Write the number shown on the die in one of the four boxes. The object is to try to form a correct mathematical sentence using the symbols shown on the game sheet. Once a number is placed in a box, it may not be changed.

2. After four rolls of the die, each player checks to see if his mathematical sentence is correct. If he has a correct answer, he scores ten points; if he does not, he scores zero.

3. Play continues for ten rounds

4. At the completion of rounds, each player totals his accumulated points, the winner determined by the highest total score.

Activity Two - Procedure:

1. Roll two dice. Each player then places each number in a separate box on his gamesheet. The object is to try to form a correct mathematical sentence using the symbols shown on the game sheet. Once numbers have been placed in boxes, they may not be changed.

2. After three rolls of the dice, each player checks to see if his mathematical sentence is correct. If all three fractions formed make a correct mathematical sentence, player scores 15 points. If the first two fractions are in correct order, the player scores 7 1/2 points. If the second and third fractions make a correct mathematical sentence, the player scores 7 1/2 points.

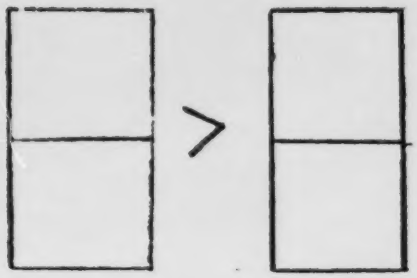
3. Play continues for five rounds.

4. At the completion of five rounds, each player totals his accumulated points, the winner is determined by the highest total score.

Activity One
Basic Rollin'

Total ____

Score



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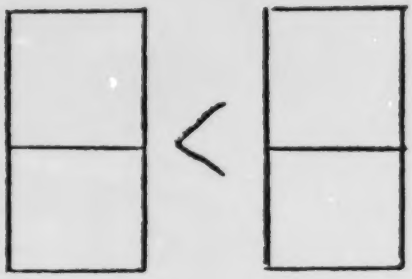
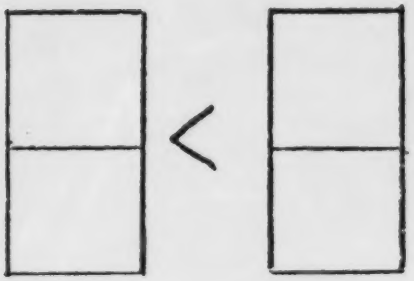
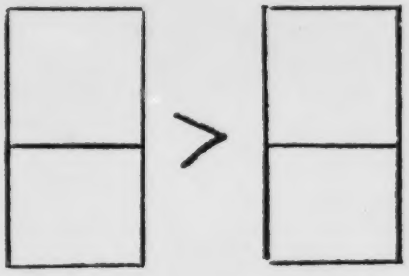
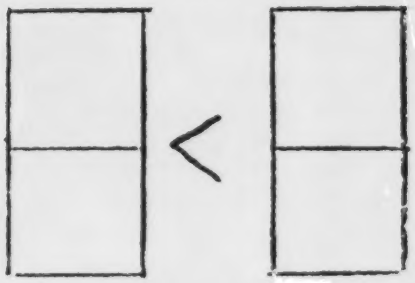
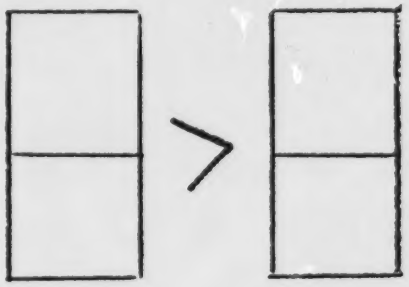
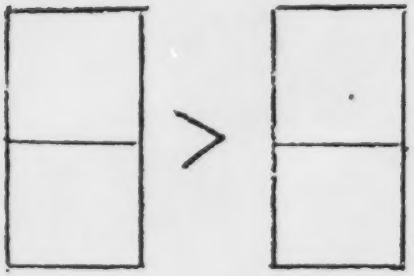


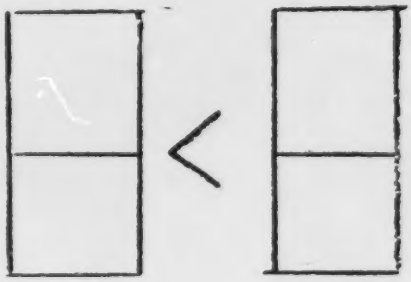


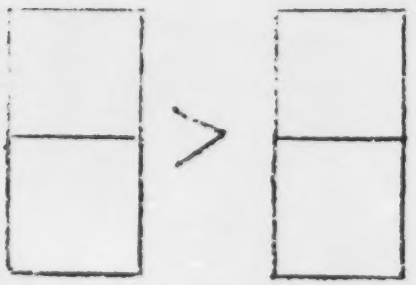


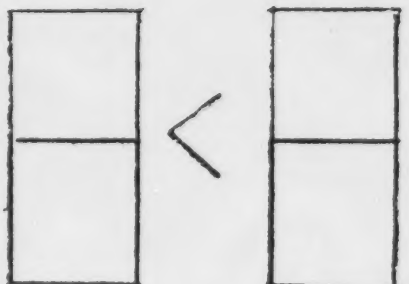








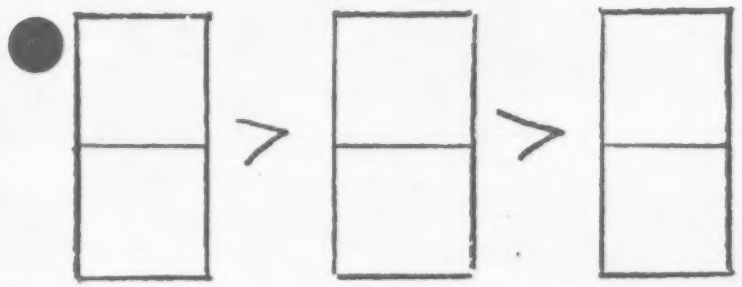




Activity Two
Basic Rollin'

Total ____ ____

Score



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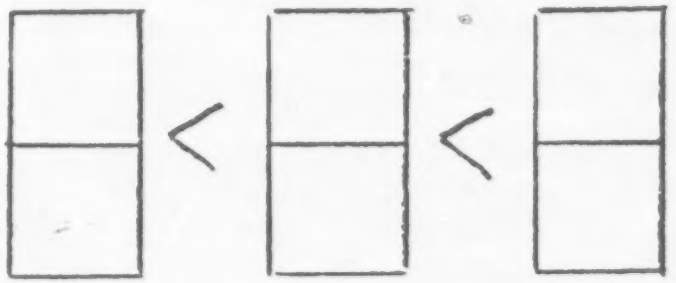

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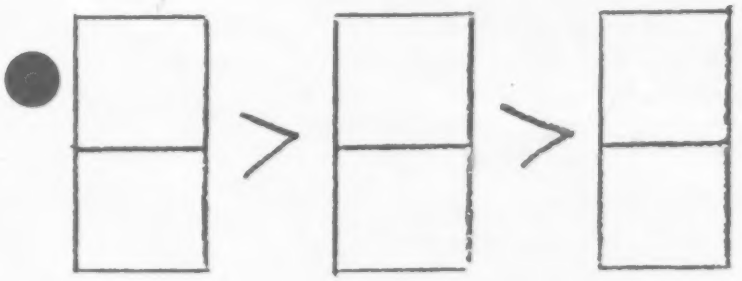

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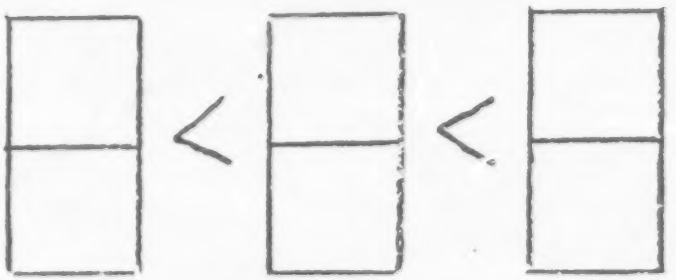

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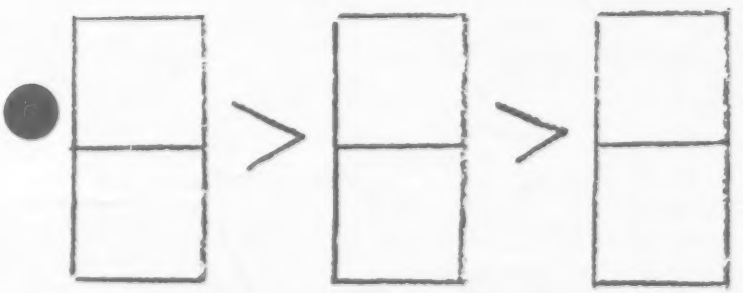


83 ____

Pick Pocket

Objective: To provide practice in ordering fractions.

Activity: for 2 to 4 players.

Materials: Cards from Fraction Pitch (disregard suits)
Card holder
NOTE: Card holder can be made by using a 9"X12" piece of construction paper. Illustration shown.

Procedure:

1. Deal five cards to each player. He must place these cards in the order in which he received them in his holder. The balance of the deck is placed face down with the first card face up.

   NOTE: The object of the game is for each player to get his own cards in his pocket from least to greatest. A player cannot use two cards of equal value in his sequence. Ordering can be done only by replacing cards from the drawing pile or the discard pile.

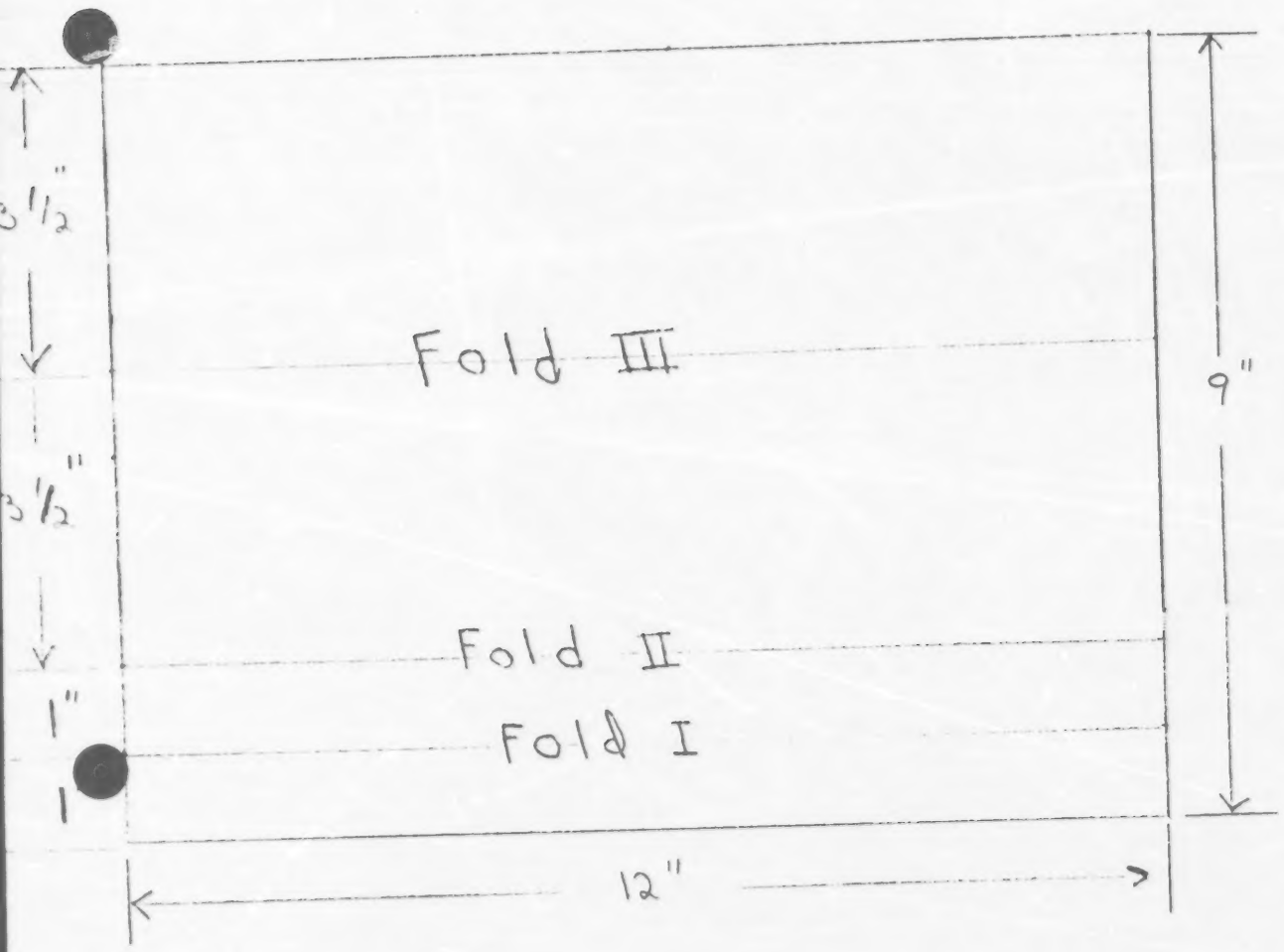
2. Each card drawn can be discarded or can be used by a player. If a player wishes to use the card he takes a card from his pocket and places the new card in the exact spot. The replaced card is then discarded. *At no time during the game can a player rearrange the cards in his pocket.

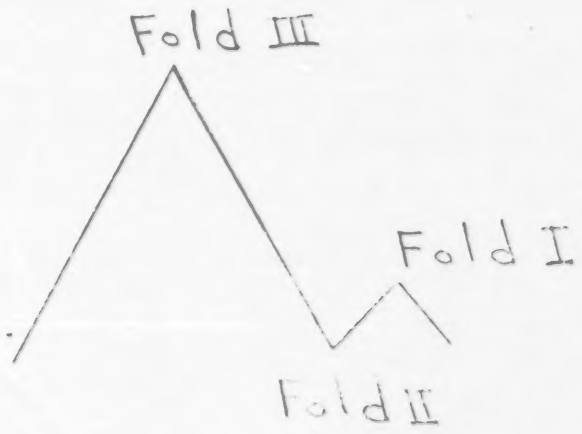
3. Play continues until a player has his cards in the proper order.

   NOTE: In placing the cards in order they need not be in sequence.

   Example: 1/12, 1/14 (equivalent to 3/12), 1/2 (6/12), 7/12. 5/6 (10/12).

Pick Pocket





FRACTION CONCEPTS

(CODED FC)

Sly Slide Activities

Activity One

Objective: Practice in renaming improper fractions as mixed numbers.

Activity: for Teacher and small group.

Materials: Sly slide.

Procedure:

1. Teacher represents an improper fraction on his fraction slide rule. This is shown to the group. The first student who can correctly rename as a mixed numeral, can call out the answer. If he is correct, he then makes an improper fraction on his fraction slide which he displays to the group. Play continues in this manner until activity is ended.

Activity Two

Objective: Practice in naming equivalent fractions.

Activity: for Teacher and small group.

Materials: Sly slide.

Procedure:

1. Teacher represents a common fraction. The student is to show the teacher an equivalent fraction on his fraction slide. The first student correctly responding, may then select a fraction for the group to rename. Plan continues until activity is ended.

Variation:

This activity may be used to change improper fractions to mixed numbers.

Sly Slide Game

Objective: To provide practice in multiple operations of fractions.

Activity: for 4 students.

Materials: Sly slide for each player
Spinner marked with +, -, x, and ÷

Procedure:

1. Students form teams of two. Team One will challenge Team Two. One member of Team One forms a fraction on his slide. The second member of the team forms a fraction on his slide.

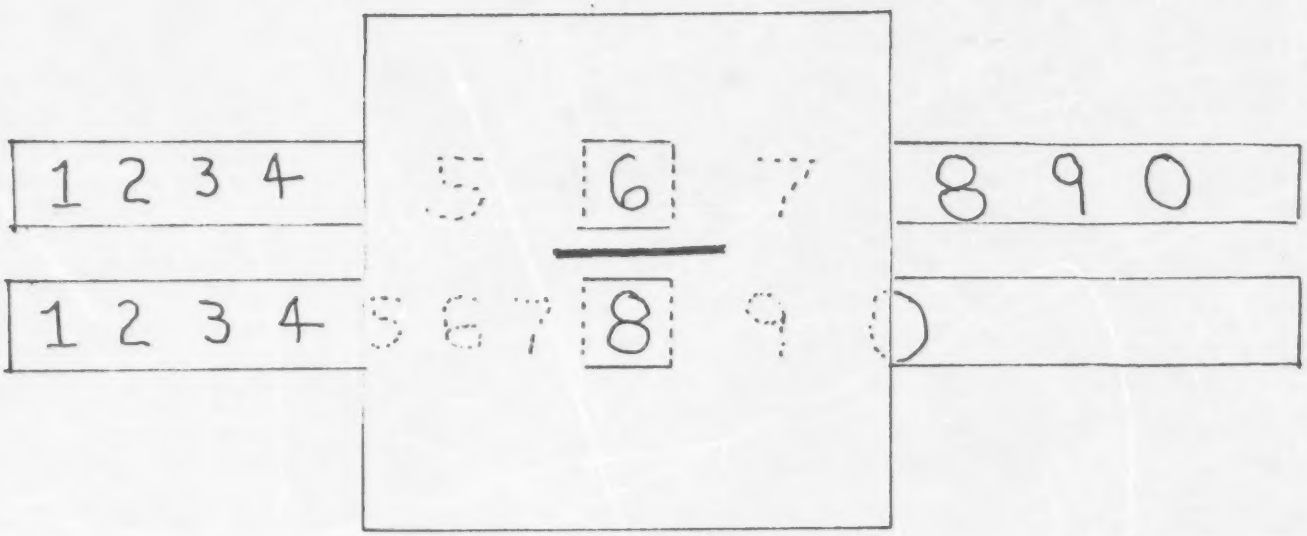
2. Team Two spins the spinner which determines the operation to be used. Team Two then performs the operation.

3. Team One may check the computation.

4. Ten points are earned for correct answers. If the answer is incorrect and challenged by Team One, Team Two may compute a second time. If they are correct this time, they score only five points. A challenge is worth five points.

5. Play continues in this manner until a designated score is achieved.

SLY SLIDE



- oak tag strips

89

Fraction Bingo

Objective: To give practice in recognizing proper fractions.

Activity: for any number.

Materials: Blank 7"X7" Bingo Cards
2 dice of same color
Markers (optional)

Procedure:

1. Each child fills in his own game card with any proper fraction or fraction equivalent to one. Since there are 49 spaces on the bingo board and only 36 different combinations can be made on the dice, the teacher may wish to discuss this with the students. Certain fractions appear more frequently than others thus the students may want to use certain combinations more than once.

2. The first player then rolls the dice and forms a proper fraction or fraction equivalent to one.

3. If a player has this fraction on his board, he covers it.

4. Play continues in this manner until a player achieves "BINGO" in the usual ways.

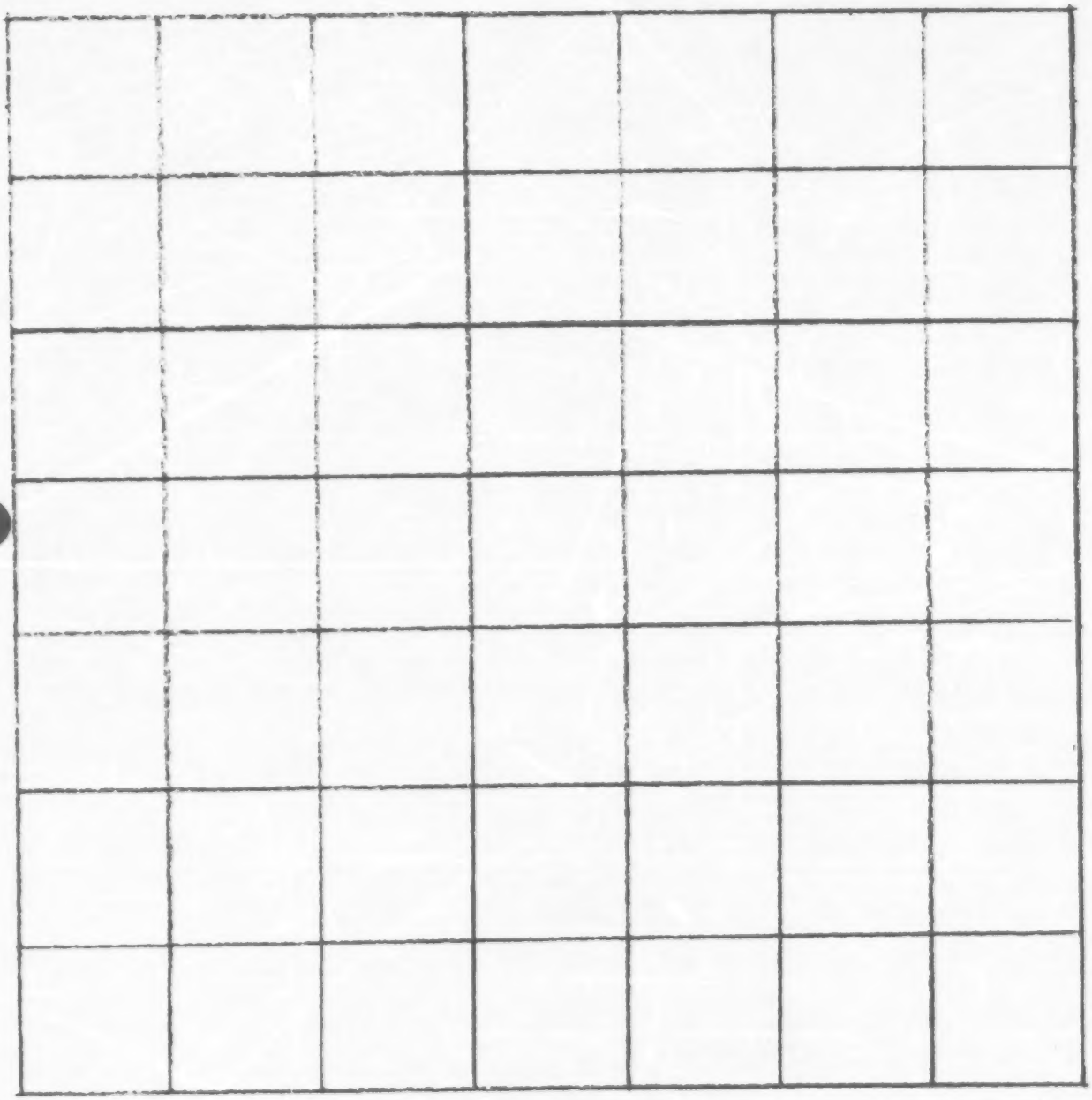
Variations:

1. Using the same cards as above, player may cover an equivalent fraction on his card. (Ex. 1/2 is rolled, 3/6 may be covered, etc.)

2. Using the same type of card, player must form an improper fraction with the two dice.

3. Using the same type of card, but two different colored dice - one denoting numerator, the second the denominator, the child must try to form improper fraction, mixed numeral, or whole number.

NOTE: The teacher may want to use cards from Variation 2 to help clarify what possibilities are available for Variation 3.



Fraction Flip

Objective: To provide practice in converting improper fractions to whole and mixed numbers.

Activity: For small group.

Materials: paper
pencil
regular deck of cards

Procedure:

NOTE: Face cards equal 10; Aces may equal either 10 or 1. All others equal face value.

1. Game goal number is designated by the dealer. This number may be changed with each deal.

2. Dealer gives each player 2 cards face down.

3. Player then decides which card he wants to use as the numerator and turns this face up. His denominator card remains face down.

4. Each player may receive as many cards as he needs face up. The sum of the face up cards becomes the numerator.

5. The player must convert this improper fraction to a whole or mixed number, coming as close as he can to the designated goal number without going over it. SAMPLE HAND ILLUSTRATED.

Variation: (For mixed numbers)

1. First card dealt is face up designating the whole number of a mixed numeral.

2. The next two cards are dealt face down.

3. Step three same as above.

4. Play proceeds as above EXCEPT designated goal number must be 10 or larger.

Game is to 5

First player is dealt a 6 and a 10. He choses 6 as the denominator. the 10 is turned face up. First hit is a 9. Total is 19/6. Second hit is a 10. Total is 29/6 or 4 5/6. Player stays.

Second player is dealt a 5 and a 10. 5 is chosen as the denominator. This card is placed face down. The 10 is turned up. First hit is a 10. Total is 20/5. Second hit is an 8. Total is 28/5 or 5 3/5.

The first player is the winner.

FRACTIONS - ADDITION

(CODED F-A)

Geoboard Genius

Objective: To provide a visual that would illustrate greatest common factor and least common multiple.

Activity: for small group.

Materials: Geoboard with multi-colored rubber bands.
Set of cards that would meet the range of geoboard used.

NOTE: To clarify, the following example will be used ____ 4 and 2.

Procedure: Part I G.C.F.

1. Student will select one card from the set.
2. The student may use any point of origin for these two numbers.
3. To illustrate the number 2, he stretches a rubber band over two segments of the board starting at the point of origin.
4. The student then selects another colored rubber band and from the same origin point, stretches it over four segments on the board thereby forming a right angle.
5. With a third color band, he should connect the vertices of the two numbers.
6. To determine the greatest common factor, count the segments that the hypotenuse is divided into. This answer is the greatest common factor.

Procedure: Part II L.C.M.

1. Step 1 and 2 same as Part I.
3. To illustrate the number 2, the student stretches a rubber band over repeated sequences of two, the first number being started at the point of origin.
4. To illustrate the number 4, the student stretches a rubber band over repeated sequences of four.
5. Continue steps 3 and 4 until the smallest possible right isosceles triangle is formed.
6. With a third color band, he should connect the vertices of the two numbers.
7. To determine the least common multiple, count the segments that the hypotenuse is divided into. This answer is the least common multiple.

The "Pits"

Objective: Review several fractional concepts - equivalent, improper, mixed numerals, adding like and unlike fractions, etc.

Activity: For 4 students.

Materials: Gameboard as illustrated.
A type of marker for a race
Pit cards - illustrated
Paper and pencil - for computation purposes
One die
Spinner (needs to show 1/2, 1/3, 1/4, 1/6. 1/8. and 1/12)

Procedure:

1. All players place their cars on the starting line. Beginning player spins the spinner which determines his starting lane and which also represents the denominator. He then rolls the die which determines the number of spaces he may move forward and which also becomes the numerator of the fraction. He moves his car the number of spaces of the numerator number. This value should be recorded.

2. On the second turn for each player, he spins the spinner for the denominator and rolls the die for his numerator. The fraction formed must now be renamed to 24ths. He must now move his car directly to the passing lane (24ths). This fraction will be added to the position of the car in the 24ths lane. This value is also recorded and their sum determines the new lap position. The driver must now move out of the passing land (24ths) to an equivalent lane.

3. If the player is unable to move from the passing lane to an equivalent lane, he must draw a Pit Card. There are eight such lanes on the board - Ex. 1/24, 5/24, 7/24, 9/24, 11/24, 13/24, 17/24, 19/24. The player does not leave the track, he simply does what the Pit Card designates.

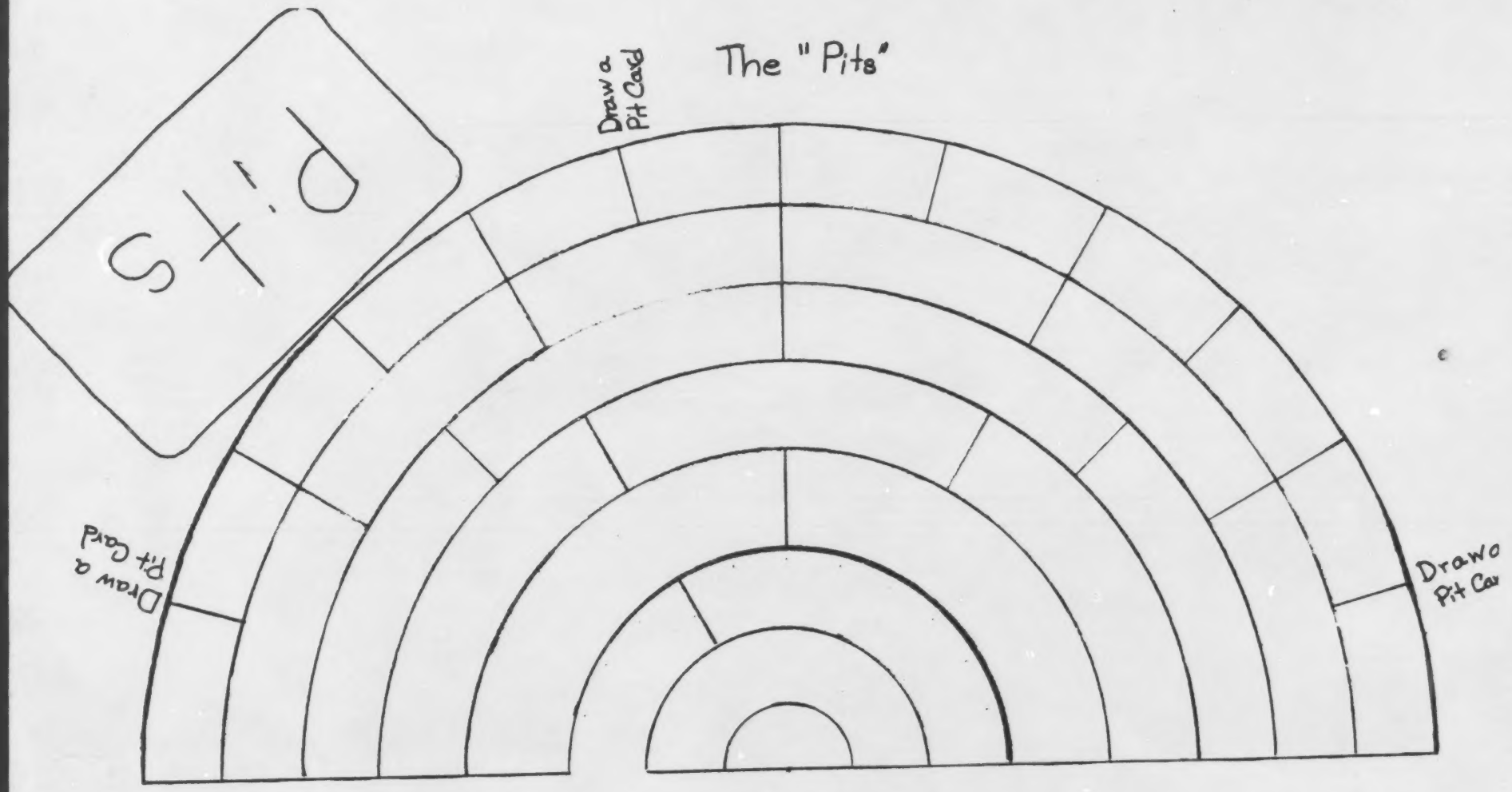
4. If a player spins the same lane number that he occupies, he does not have to move to the passing lane.

NOTE: In making Pit Cards, if the penalty is moving back spaces, this should be subtracted from the person's lap total.

Play continues in this manner with each player keeping a running total until the designated number of laps is achieved. The first player to reach this number is the winner.

Gameboard - Special Note:

Make two copies of the semi-circle shown. Join the two halves to make a complete circle.


Pits
The "Pits"
Draw a Pit Card
Draw a Pit Card
Draw a Pit Card

CAUTION FLAG. LOSE A TURN

OIL SLICK! BACK UP 1/12 OF A LAP

OIL SLICK! BACK UP 1/6 OF A LAP

SPIN OUT! BACK UP 1/4 OF A LAP

BLOW OUT! LOSE A LAP

SPIN OUT! LOSE A LAP

98

BLOWN ENGINE! BACK UP 1/6 OF A LAP

CAUTION FLAG. BACK UP 1/3 OF A LAP

99

REFUEL! BACK UP 1/12 OF A LAP

BOXED! BACK UP 1/12 OF A LAP

PILE UP!
BACK UP 5/12 OF A LAP

REFUEL! LOSE A TURN

BOXED! BACK UP 1/8 OF A LAP

-85-

PITS

PILE UP! LOSE A TURN

BLOWN ENGINE. BACK UP 1/3 OF A LAP

101

Fraction Pitch

Objectives: To provide practice in ordering, renaming, and adding fractions.

Activity: for small group.

Materials: 48 cards labeled with fractional suits of hearts, spades, diamonds, and clubs. (1/12, 1/6, 1/4, 1/3, 5/12, 1/2, 7/12, 2/3, 3/4, 5/6, 11/12, 12/12)

Procedure:

1. Follow ordinary Pitch Rules

2. Dealer deals six cards to each player. Each player may then bid according to the cards in his hand. A bid may be two, three, or four points. The four points in Pitch are high, low, Jack, and game. These points must be earned in the same suit except for game which is the sum of all cards captured in play.

   Example hand:

   "Jack"

   $\frac{12}{12}$ $\frac{3}{4}$ $\frac{1}{12}$ $\frac{11}{12}$ $\frac{5}{6}$ $\frac{7}{12}$

3. The player may wish to bid two on the hand using ♡'s as trump. The highest card is then played. If able to follow suit to the card led, each player in turn must either follow suit or trump. If unable to follow suit, he may play any card. A trick is won by the highest trump, if any; otherwise by the highest card of the suit led. The winner of a trick leads to the next hand.

   Scoring: One point is scored for winning in play: "high," highest trump card in play, "low", lowest trump card in play; "Jack", Jack of trumps; and "game", sum of all cards captured in play. High and low are always counted, Jack may not be in play, and game is not scored if two players tie for it.

   If the player makes his bid these points are added to his score. If he does not, the bid is subtracted from his previous score. The other players may also earn a point by capturing either low, Jack or game, or by having high in their hand. Play continues in this manner until a score of 11 is reached.

   NOTE: The procedure for Pitch was modified from According to Hoyle by Richard Frey; copyright 1970.

Fraction Black Jack

Objective: Adding like and unlike fractions.

Activity: for small group

Materials: set of cards from Fraction Pitch.

Procedure:

1. Follow the normal rules for Black Jack. Winner is the player closest to 21/12ths.

2. Dealer gives one card to each player face down in rotation. He then gives each player one more card face down and gives himself a card face up.

3. Each player may then ask for additional cards one at a time. Each players object is to have cards whose value is 21/12ths or as close to 21/12ths without going over.

4. If a player has been dealt 21/12ths he calls it out immediately. This player then becomes the new dealer.

NOTE: Directions for play have been taken and modified from According to Hoyle by Richard Frey, Copyright 1970.

Scorch!

Objective: To provide practice in renaming fractions; addition of fractions to form whole numbers.

Activity: for 2 to 4 students.

Materials: Cards from Fraction Pitch Game (disregard suits)
Strips from Strip Game
Paper and pencil

Procedure:

1. Form a Tic Tac Toe Board using four strips.

2. Dealer deals six cards to each player leaving the rest of the deck face down.

3. First player may place any one of his cards in any space he wishes.

4. Play continues in this manner keeping the objective in mind which is to try to form a Tic-Tac-Toe whose fractional sum is equal to any whole number. One point is scored by a player if a tic-tac-toe is made.

5. Play continues until the grid is completed. Players may continue to earn as many points as he can form tic-tac-toes in one game. Scores may be kept on paper. The winner is the first player to earn five points. Any player who is unable to play, must draw a card from the face down pile. If he can play this card, he does so. If not, play continues to the next player.

6. Special Rule: A player may not play a card that finishes a row unless the sum of that row (with his card) would equal a whole number. The Tic-Tac-Toe only needs to be in one direction.

Daffy Dots

Objective: To provide practice in adding fractions.

Activity: for 2 to 3 students.

Materials: Pencil
Game sheet (illustrated)

Procedure:

1. Each player takes turns writing fractions on the game sheet (See illustration). The fractions written should be halves, thirds, fourths, sixths, and twelfths.

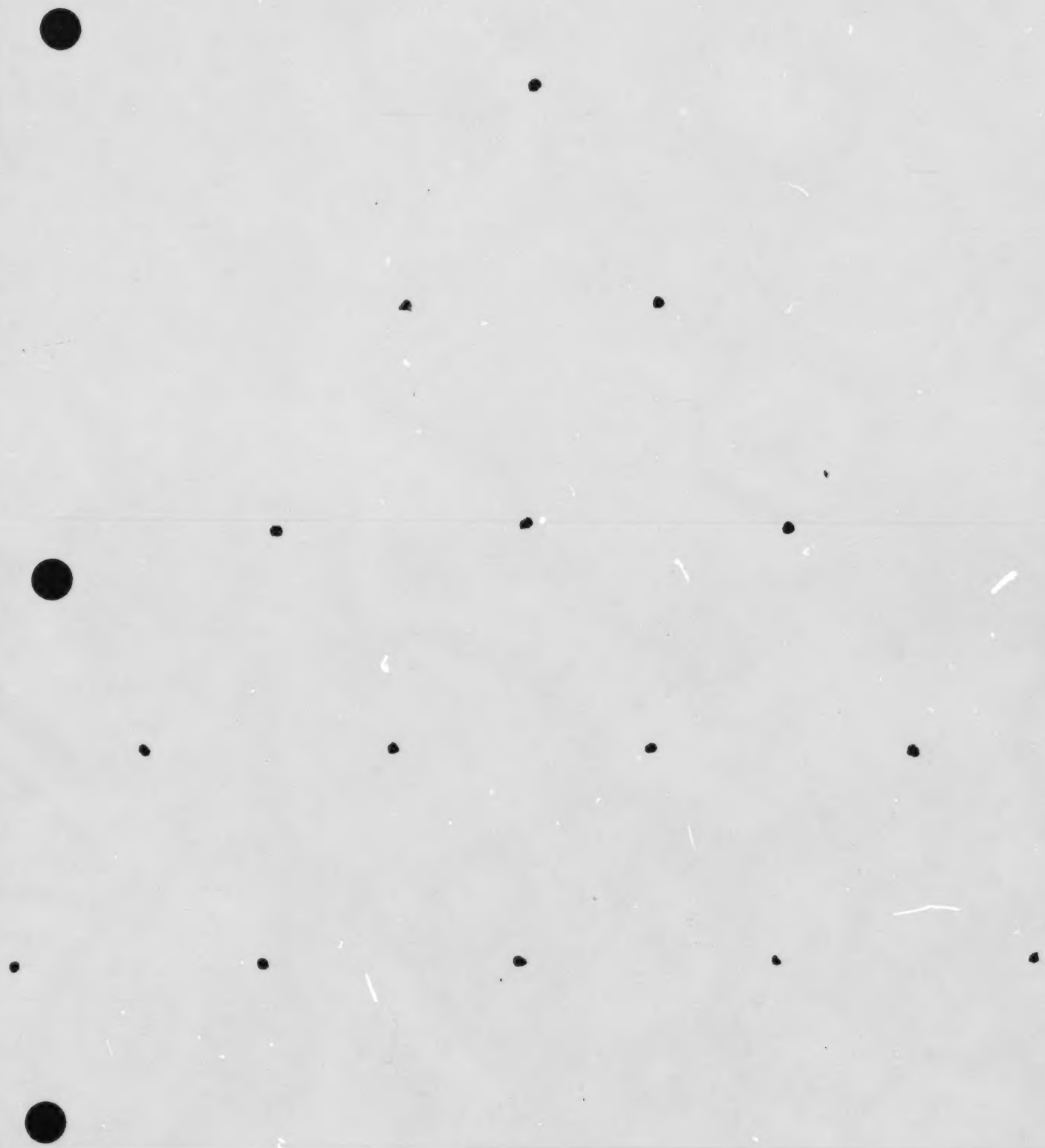
2. The first player connects two dots. He may connect point to point but may not pass through a fractions.

3. The value of a fraction is earned when the sides of a polygon are completed. When a player closes a polygon, he should begin a tally of his fractions.

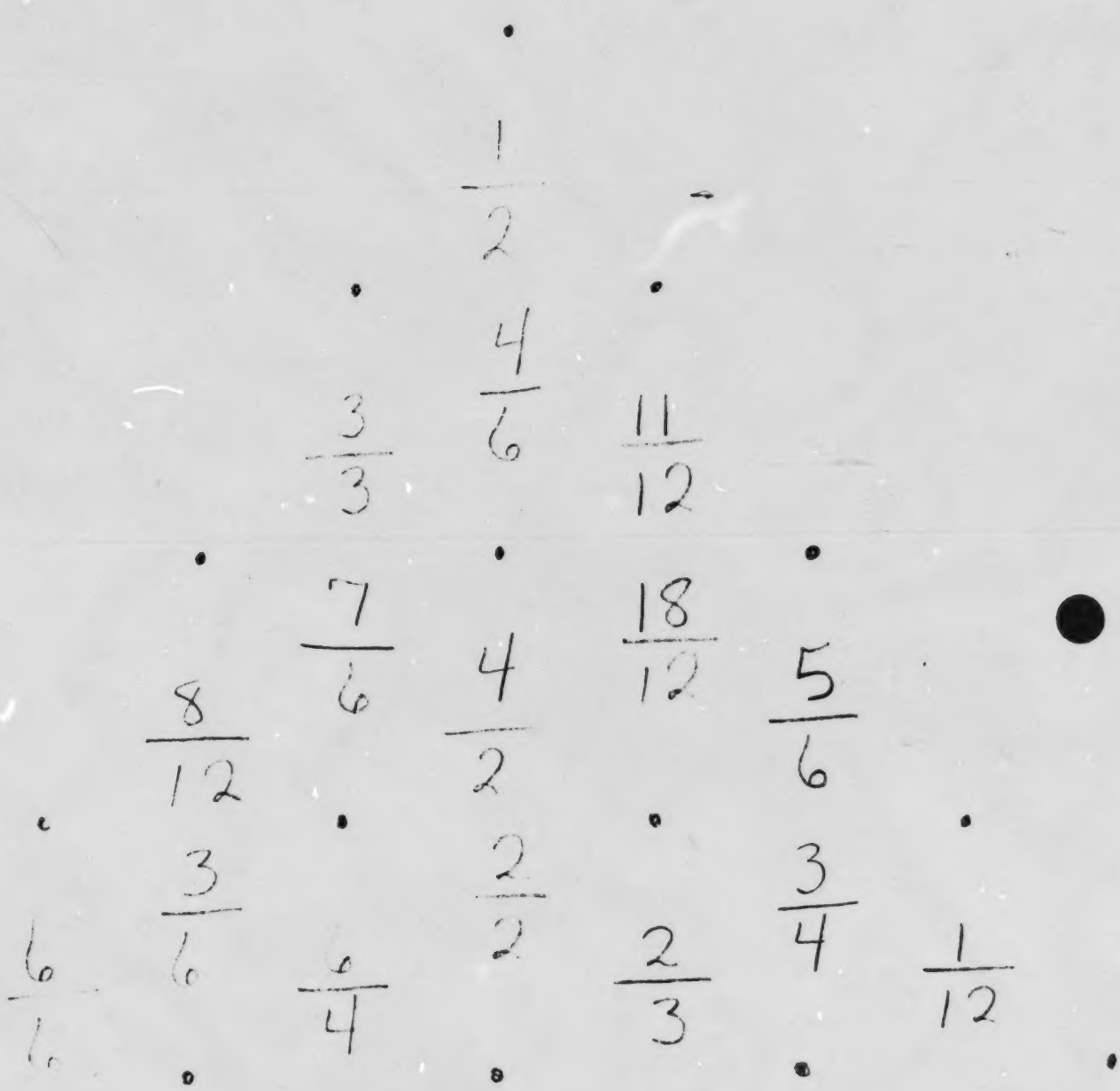
4. Play continues in this manner until all polygons have been closed.

5. Each player must now add the fractions on his tally. The winner is the person with the highest score.

Daffy Dots Game Sheet



Watty Dots
Fraction Examples



Dotty Dot Game Sheet

Even Up

Objective: To provide visual practice in recognizing equivalent fractions, finding the sum of fractions, finding the difference between two fractions.

Activity: for 2 to 4 students. Teacher participation when first introducing activity.

Materials: Balance scale
Interlocking centimeter cubes
Fraction Pitch cards

Procedure:

1. Before starting this activity the teacher needs to construct a whole unit. For example - one whole unit may be twenty-four interlocking cubes of the same color. Using 24ths the following fractional parts should be made:

	Number of Fractional Parts Needed
4	One-half - 12 cubes long
6	One-third - 8 cubes
8	One-fourth - 6 cubes
12	One-sixth - 4 cubes
16	One-eighths - 3 cubes
24	One-twelfths - 2 cubes
	One-twenty fourths - 1 cube

NOTE: This is one possibility. The teacher may construct any other whole unit and its equivalent fractional parts.

I. Equivalent Fractions

The dealer gives the first player a card. This player then must place this fractional part on one side of the balance. By using the remaining fractional parts he must balance the scale thus showing two equivalent fractions. He should do this as many different ways as possible. Example: 1/3 can be balanced by using 2/6, 4/12. 8/24.

For each equivalent fraction that is formed 5 points are awarded. One hundred points is game or any other designated total.

II Addition of Fractions

The dealer deals the first player two cards. This player must then place these fractional parts on one side of the balance. By using the remaining fractional parts he must balance the scale thus showing their sum. Using the blocks the answer must be expressed in its lowest possible form.

III Subtraction

In performing subtraction with the balance, the problem must first be restated as an addition problem. Example: Two cards dealt are 5/12 and 1/4. $5/12 - 1/4 = N$
$5/12 = N + 1/4.$

Five-twelfths and one-fourth placed on opposite sides of the scale. To balance the scale, the player adds additional fractional parts from the remaining pile. These additional parts represent the difference between the two given fractions.

FRACTION - SUBTRACTION

(CODED F-S)

A "Perfect Ten"

Objective: To provide practice in subtracting whole numbers, mixed numerals, and common fractions.

Activity: for 2 - 4 students

Materials: paper, pencil, four common dice

Procedure:

1. Each player records the number 10 on his paper. The object of the game is for the winner to come as close to one as possible, by subtraction without going below one.

2. Each player in turn rolls the four dice. From the four dice he chooses two to form an improper or common fraction.

   NOTE: One may not be used as a denominator. If an improper fraction is used he must rename it to a mixed number.

3. The student then subtracts the common fraction or numeral he has chosen from the 10. In each successive play, the student will continue to subtract from the previous difference. If a player thinks he has discovered an error in another player's procedure, he may challenge. Whoever is incorrect must add the number of the highest die to his score. A player has the option to stop when he feels he has come as close to one as he thinks he can.

Variations:

1. Start with 20 instead of 10. The player rolls the four dice. He then selects any three to form a mixed number. The fractional part of the mixed numeral must be less than one. Play proceeds as in A "Perfect Ten."

   NOTE: To increase the difficulty, the fractional part of the mixed numeral may be an improper fraction. However, this must be renamed before subtraction.

2. The game starts with zero. The players, using the same procedure, would add their choice. The winner would be the player coming as close to ten as possible without going over ten.

3. The game starts at five. Using the same procedure, the player subtracts until the number one is achieved. To do this, the player is allowed to pass. Ex: Players score 1 2/3. If he cannot make a fraction which would subtract away to one, he has to forfiet his turn. A one may be achieved before play reverses, and players begin to add back up to five. The winner is the first player to achieve five.

Advanced Rollin'

Objective: To provide practice in addition and subtraction of proper and improper fractions; to compare fractions.

Activity: For any number.

Materials: pencil
2 dice
game sheet as illustrated

Procedure:

Before play, the teacher choses operation to perform and comparison to be made (greater than, less than). Players need to record this on the game sheet.

1. Roll the dice. Write each number shown on the dice in a separate box on the gamesheet. The object is to perform the operation chosen and also form a correct mathematical sentence in four rolls.

2. Scoring: If the player has a correct mathematical sentence he scores 15 points. If both fractions are less than one, the player scores three bonus points. If both fractions are greater than one, the player scores five bonus points.

Variations:

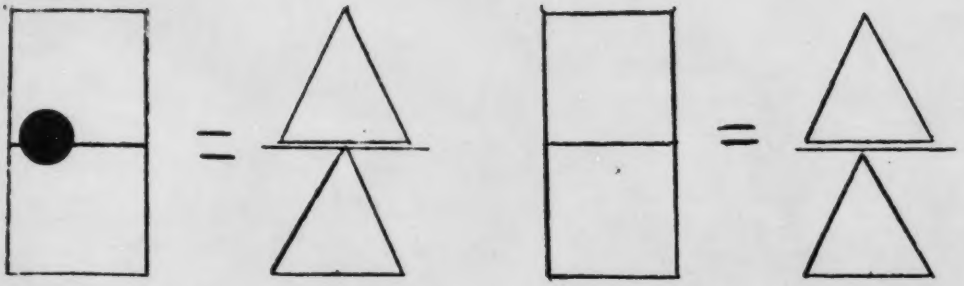
1. This game may also be used to provide practice in subtracting fractions. If a player makes a subtraction sentence that he can't subtract, he earns no points for that round.

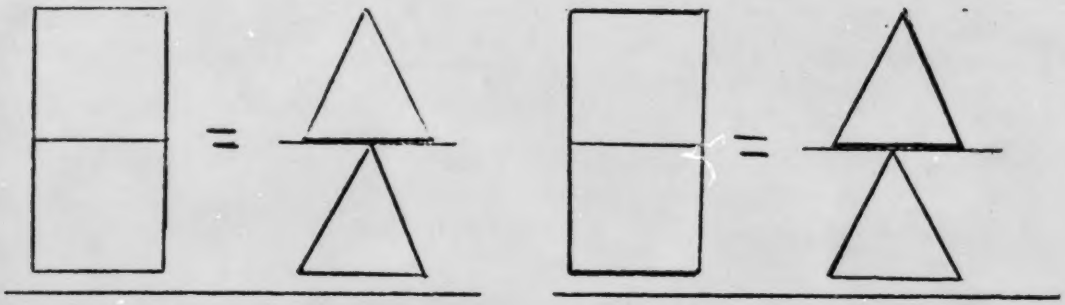
2. This game may also be used to provide practice in addition and subtraction of mixed numerals. To adapt the gamesheet allow appropriate spaces for whole numbers.

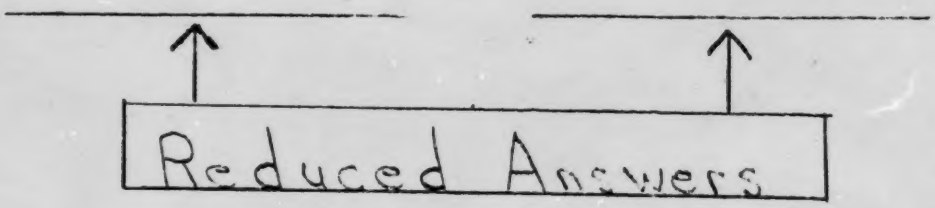
FRACTION-MULTIPLICATION

(CODED F-M)

Advanced
Rollin







J & L Country Club

Objective: To provide practice in multiplying a whole number times a fraction, in rounding whole numbers to the closest ten.

Activity: for 2-4 players.

Materials: gameboard as illustrated
score card as illustrated
Playing card as illustrated
12 sided die - dodecahedron (or spinner)
regular die
fairway cards as illustrated
tee cards as illustrated
pencil
paper for computation (optional)
ball markers (chips)

Procedure:

1. Playing boards should be assembled. Twelve-sided die marked with the following values - 1/2. 1/4. 2/4, 3/4, 2/8, 4/8, 5/8, 6/8, 7/8, three sides marked Tee Card (T.C.).

2. Each player receives a playing card at the start of play. The group playing together receives one score card on which to record their score per hole.

3. The first player begins by rolling the dodecahedron. If a fractional value appears he multiplies it by the total yardage of the hole. This computation is done on the playing card, also filling in the yardage left to the green. He then places his marker on the correct distance on the fairway. Each hash mark represents 10 yards. If a tee card (T.C.) appears on the die, the player must draw a card from the Tee Card pile and perform what is indicated. All players do this procedure for their first tee shot.

4. The second shot is played the same way with the player multiplying the fraction appearing on the die by the number of total yards left. Anytime this answer does not come out a multiple of 10, the player must round this answer to the nearest ten. If this answer comes out a mixed number he must draw a Fairway Card and perform what is indicated.

5. After the computation has been done, the player records this on his playing card and moves his marker accordingly.

   The remaining plays are computed using the regular die. The number rolled is multiplied by 10 to determine the yards gained. If there are any yards left, this process is repeated until such time as the player is on the green.

Special Playing Rules:

1. Overshooting the green - penalty strokes are determined the following way: Ex. - Play is 40 yards away from green. His computed distance is 60 yards. Since he is twenty yards over the green he must add a two stroke penalty. (One stroke for every 10 yards beyond the green.)

2. Hitting into a hazard - 1 stroke penalty.

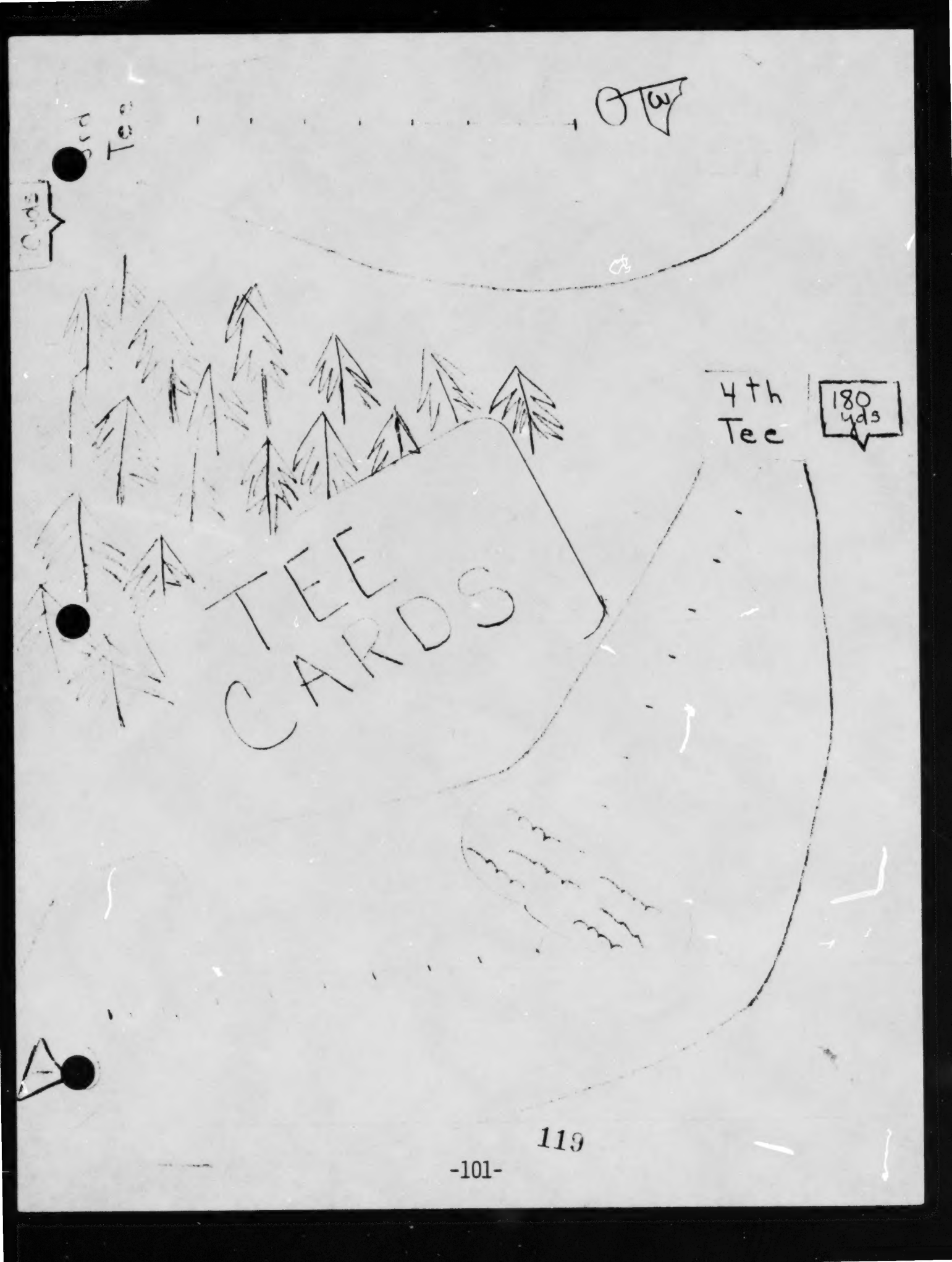
   a. Sand traps - player remains in the trap until next turn.

   b. Water - player must move ball behind pond and play from there.

Score Card:

At the end of each hole, players should record their total number of hits and penalties on the score card. Winner is determined by the lowest score after completing the eight holes.

1st.
Tee
160
Yds.
220
yds
V
and
Tee


4th
Tee
180
yds
TEE
CARDS

5th Tee
60 yds
FAIRWAY CARDS
Pond
6th Tee
100 yds
9

7
120 yds
8
121
200 yds
7th
Tec

Playing Cards

Shots	Comp. yds. Gained	yds. Left
Tee		
2nd		
3rd		
4th		

Shots	Comp. yds. Gained	yds. Left
Tee		
2nd		
3rd		
4th		

___hole Shots	Comp. yds. Gained	yds. Left
Tee		
2nd		
3rd		
4th		

___hole Shots	Comp. yds.	yds. Left
Tee		
2nd		
3rd		
4th		

Par	4	5	3	4	3	4	5	4	32
Name	1	2	3	4	5	6	7	8	Total

Score Card

FAIRWAY CARDS

SLICED - 10 YARDS GAINED
1 STROKE PENALTY

HOOKED THE BALL - 20 YARDS.

SAND TRAP - MOVE 10 YARDS

SLICED - 30 YARDS GAINED

DRIBBLE - 10 YARDS GAINED

WOODS - GAINED 30 YARDS - 1 STROKE FOR CHIPPING OUT OF WOODS.

125

WHIFFED THE BALL - 1 STROKE PENALTY
LOSS OF TURN

126

FAIRWAY CARDS

OUT OF BOUNDS - OFF CLUB PROPERTY
2 STROKE PENALTY - BALL REMAINS AT ORIGINAL POSITION.

WATER HAZARD - MOVE 20 YARDS
1 STROKE PENALTY

REACHED THE GREEN

GOOD HIT! BALL TRAVELED 30 YARDS

WHIFF - 1 STROKE PENALTY:
LOSS OF TURN

GOOD HIT! BALL TRAVELED 20 YARDS

127

DRIBBLE 10 YARDS GAINED

128

FAIRWAY CARDS

WATER HAZARD - MOVE 30 YARDS.
1 STROKE PENALTY. PLACE BALL BEHIND POND.

OUT OF BOUNDS OFF CLUB PROPERTY.
2 STROKES PENALTY. BALL REMAINS AT ORIGINAL POSITION.

129

130

TEE CARDS

DRIBBLE - 10 YARDS OFF TEE

OUT OF BOUNDS - 1 STROKE PENALTY
HIT FROM TEE AGAIN

LOST BALL IN WOODS - 2 STROKE PENALTY. HIT FROM TEE AGAIN.

HOOK INTO POND - 40 YARDS GAINED
1 STROKE PENALTY

TEE SHOT TRAVELED 60 YARDS

POND BALL - 80 YARDS GAINED
1 STROKE PENALTY

131

TEE SHOT TRAVELED 100 YARDS

132

TEE CARDS

WHIFFED THE BALL - COUNTS 1 STROKE.

DR..BLE 20 YARDS OFF TEE

SLICED INTO THE WOODS - 40 YARDS
1 STROKE PENALTY

SLICED INTO THE FAIRWAY TRAP -
1 EXTRA STROKE

LOST BALL INTO WOODS - 2 STROKE
PENALTY. HIT FROM TEE AGAIN.

HOOK INTO POND - 60 YARDS GAINED
1 STROKE PENALTY

133

POND BALL - 80 YARDS GAINED
1 STROKE PENALTY

134

TEE CARDS

OUT OF BOUNDS - 1 STROKE PENALTY. HIT FROM TEE AGAIN.

WHIFFED THE BALL - COUNTS 1 STROKE.

135

136

STRIPS

Objective: To provide visual examples of fractional multiplication as a teacher directed activity.

Activity: for 1 to 4 students or whole group.

Materials: 2 different sets of colored taboards
6 of each color per student (red and blue)

Procedure:

Teacher would choose two proper fractions to multiply. Ex. 3/5 X 1/4. Red strips will represent the numerator of the fraction. The denominator of the fractions will be represented by the total number of strips.

1. Represent 3/5 by placing three red strips horizontally and two blue strips. Now represent 1/4 by placing one red strip vertically and the three blue strips (See illustration.)

2. Place the model of 3/5 over the model of 1/4. (See illustration.)

3. The product of the numerators will be the number of intersections formed by the red strips. The product of the denominator will be the total number of intersections of the red and blue strips. (See illustration.)

NOTE: Teacher could demonstrate this activity at the blackboard using masking tape.

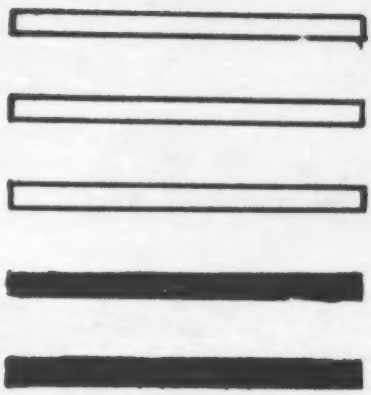


Fig. 1

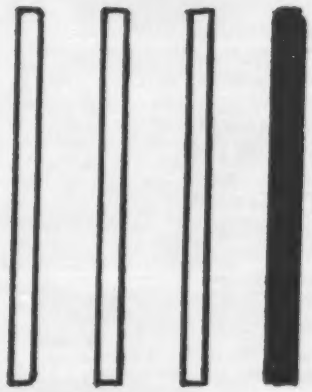


Fig. 2

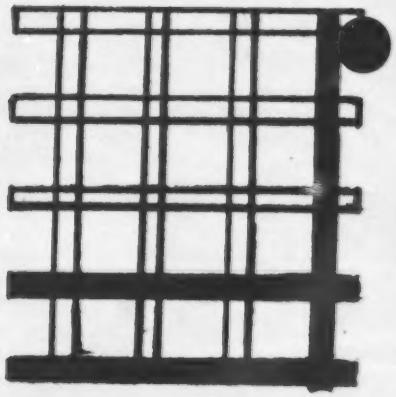


Fig. 3

Roll and Strip

Objective: To provide visual practice in multiplying two common fractions.

Activity: for 2 - 3 players.

Materials: 4 dice
6 strips of red paper
6 strips of blue paper for each player (as used in STRIPS)

Procedure:

1. The first player rolls the 4 dice and makes two common fractions. Using the models shown in the previous activity, he demonstrates the multiplication of the two fractions. The product is then recorded. If his model is incorrect the next player may challenge and construct it correctly.

2. The first player loses his turn and the resulting product. The player who constructs it correctly receives the product and proceeds with his turn.

3. Play continues with a designated number of rounds. At the end of the rounds the players add the numerators of all his products. The winner of the game is the player with the highest sum.

Plan a Party

Objective: To provide the students with an everyday situation using fractions.

Activity: for any number.

Materials: Recipe copies
Paper and pencil

Procedure:

Using each recipe as written, student must adapt the proportions suitable to meet the needs of his "party size." For example: party for number of students in the class; a group of twelve; a group smaller than the original recipe.

NOTE: Teacher may wish to provide recipes or cookbooks.

Students may wish to bring recipes from home.

Recipe samples are included.

Recipe Samples:

Yogurt Banana Sips

1/2 Cup unflovored yogurt
1/2 Medium Banana, sliced
1/8 Cup packed brown sugar
1/8 teaspoon vanilla
Dash of nutmet
1 Ice Cube

Place all ingredients in blender container. Cover and blend on high speed until smooth, about 30 seconds. (1 serving - 3/8 cup each)

Sesame Snacks

1/2 Cup pecans
1/2 Cup almonds
1/2 Cup raisins
2 teaspoons honey
Sesame seeds

Chop the pecans, almonds, and raisins well in the blender. Mix in the honey, form into small balls. Roll the balls in sesame seeds and chill.

Serves: 6
Storage: Freezes well.

FRACTION-DIVISION

(CODED F-D)

Tacos

4 Taco Shells
1/2 Lb. hamburger
3/8 Cup water
1/2 medium onion, chopped
1 Tablespoon chili powder
1/2 teaspoon salt
1/2 teaspoon ground cumin
1/2 clove garlic
1/2 Cup shredded lettuce
1/4 Cup chopped onion
1/2 Cup shredded cheese
1/2 large tomato

Prepare Taco shells. Cook and stir hamburger in 10" skillet until light brown; drain. Stir in water, 1/2 chopped onion, chili powder, salt, cumin and garlic. Heat to boiling, reduce heat. Simmer uncovered, stirring occassionally, until thickened, about 10 Minutes.

Spoon hanburger mixture into each shell. Top with shredded lettuce, onion, cheese, and tomato.

Honey Milk Shake

2 Cups milk
1 Egg
2 Tablespoons honey
1/2 teaspoon vanilla extract
1/4 Cup cracked ice
1/8 teaspoon freshly grated nutmeg

Combine all the ingredients in a blender and blend well. Serve chilled.

Serves: 2
Storage: Freezes well.

Indian Pudding (8-10 servings)

4 Cups Milk
1/2 Cup Corn meal
1 Egg
1/2 Cup molasses
1/2 Cup Milk
1/2 teaspoon salt
1/2 teaspoon ginger
1/4 teaspoon cinnamon

Preheat oven to 300°
Use a double boiler. Fill the bottom with water. Bring it to a boil. Put 4 Cups of milk in the top. Bring it to a boil. Stir the corn meal carefully into the milk, make sure no lumps remain. Remove the milk from the heat. Now put the top part of the boiler back over the bottom. Cook the cornmeal mixture, stirring often (20 minutes). Remove from heat. Beat the egg until light yellow and foamy. Stir in molasses, milk, ginger, salt, and cinnamon. Add to cornmeal mixture. Stir well. Pour into greased 1 1/2 quart baking dish. Bake for 2 hours.

Shoo Fly Pie

1 Cup flour
2/3 Cup brown sugar
1/2 teaspoon salt
1/2 Cup molasses
1/2 Cup water
4 Tablespoons butter
(1/2 teaspoon baking soda)
1/8 teaspoon ground cloves
1/4 teaspoon ginger
1/4 teaspoon nutmeg
One 9" pie crust.

Preheat over to 375°.
Mix flour, sugar, salt, ginger, nutmeg, and ground cloves in a large bowl. Mix in the butter. The mixture will be crumbly. Boil the water. Remove from heat. Add baking soda and molasses. Stir well. Put aside 1/3 Cup of the flour mixture. Combine the rest with the molasses mixture. Pour into the piecrust. Sprinkle with the remaining flour mixture. Bake 30 minutes. Cool on a rack before serving.

Fraction M. A. D. S.

Objective: To practice the four operations with fractions (M = Multiply, A = Addition, D = Division, S = Subtraction).

Activity: for 2 to 4 students.

Materials: Gamesheet as illustrated
One die marked 1/4, 2/4, 2/4, 3/4, 4/4, and 4/4
One die marked 1/4, 1/4, 2/4, 3/4, 3/4, and 4/4
Colored markers, ten each child
Paper and pencil.

Procedure:

Each player roles the dice. With the two fractions rolled, the player may either add, subtract, multiply or divide to form an answer on the game board. This number is then covered with his marker on the board. Players should do the computation each time in case they may wish to challenge. If a player cannot cover a number on the board, he must pass. Play continues in this manner. If after two rounds players are unable to cover a number on the board, play is ended.

Scoring: Five points per marker.
Five bonus points are scored by a player for any adjacent or diagonal square covered by his marker.

Variations:

1. Instead of using the denominator fourths any other denominator may be used. Dice and gameboard will need to be adapted.

2. Difficulty of the game can be controlled by limiting the number of operations used.

score: 30 points
5 pts per ★ for 15 points
5 pts for each adjacent or diagonal square - 15 bonus

$\frac{1}{2}$	3	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{3}{8}$ ●
$\frac{2}{3}$	$1\frac{1}{2}$ ★	$\frac{0}{4}$	2	4 ●
$\frac{1}{8}$	1 ★	$\frac{3}{16}$ ★	$\frac{1}{4}$	$\frac{1}{16}$ ●
$1\frac{1}{3}$	$\frac{1}{3}$	$1\frac{3}{4}$	$1\frac{1}{4}$	M.A.D.S.

score: 25 points
5 per circle for 15 points
5 bonus pts for each adjacent square - 10 points bonus

$\frac{1}{2}$	3	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{3}{8}$
$\frac{2}{3}$	$1\frac{1}{2}$	$\frac{0}{4}$	2	4
$\frac{1}{8}$	1	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{16}$
$1\frac{1}{3}$	$\frac{1}{3}$	$1\frac{3}{4}$	$1\frac{1}{4}$	M.A.D.S.

Expert Rollin'

Objective: To provide practice in multiplication and division of fractions.

Activity: for any number.

Materials: Pencil
two dice
gamesheet as illustrated

Procedure:

Before play teacher choses operation to perform. Players mark it on the game sheet.

1. Roll the dice. Write each number shown on the dice in a separate box on the gamesheet. The object is to perform the operation and also form a correct mathematical sentence in four rolls.

   NOTE: A one on the die is wild. Each player has the option to use it as any other number on the die.

2. Scoring: If a player has a correct mathematical sentence, he scores 15 points.

   If he has a mixed numeral less than three in his answer, he scores a bonus of five points. If his mixed numeral is greater than three, he scores a bonus of ten points.

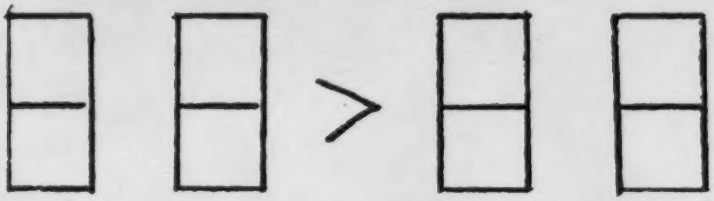
3. Play continues for four rounds.

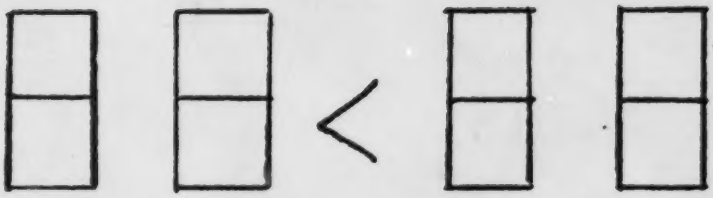
Variations:

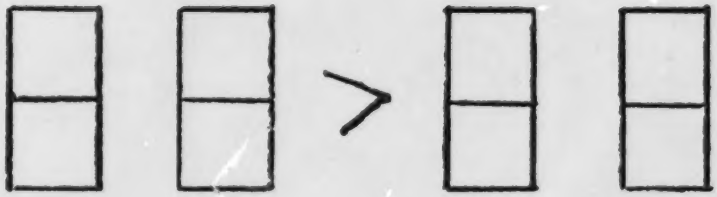
This game may be adapted to the division of fractions.

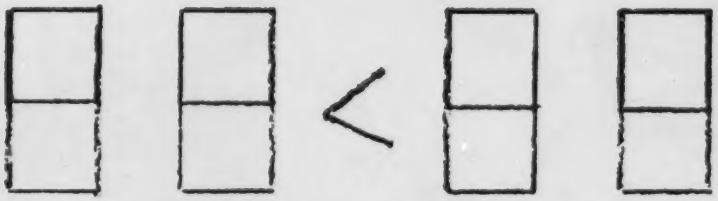
NOTE: On gamesheet, students need to write proper operation sign.

Score









Total

Hot Rolls!

Objective: To provide practice in multiplying and dividing common fractions.

Activity: for 3-7 students.

Materials: 6 miltiplication cards as illustrated
6 division cards as illustrated
paper and pencil
2 different colored dice
markers

Game One - Procedure:

1. Caller rolls the two dice. Always using the numerator as one, the player makes two fractions.

2. Each player should multiply these two factors using paper and pencil. If the answer appears on the player's game card, he covers the space.

3. When all have finished, the caller announces the correct answer. If a player has made an error, he must remove his marker from the board. If a player has not finished before the called announces the answer, he may not cover his answer on the board.

4. Play continues in this manner following ordinary rules for a win in Bingo.

Game Two - Procedure:

Use same equipment as for Game One with division cards.

1. Called rolls the two dice. One color will represent the divisor; the other will represent the dividend. He reads the division sentence to the group. Ex.: He rolls a four and a three. He would state the problem as $1/4 \div 1/3$.

2. Each player must write this problem and solve it. Each player having the correct answer on his card should cover it.

3. When all have finished, the caller announces the correct answer. If a player has made an error, he must remove his marker from the board. If a player has not finished before the caller announces the answer, he may not cover his answer on the board.

4. Play continues in this manner following ordinary rules for a win in Bingo.

Game Cards for Math Notebook

$\frac{2}{3}$	$\frac{1}{2}$	$\frac{3}{4}$	1
$\frac{4}{5}$	FREE	$\frac{1}{4}$	$\frac{1}{5}$
5	2	$\frac{5}{6}$	$\frac{1}{3}$
$2\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{2}$	3

$\frac{4}{5}$	2	$\frac{1}{6}$	$\frac{1}{4}$
$1\frac{1}{2}$	FREE	1	6
$1\frac{1}{4}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{1}{2}$
$\frac{5}{6}$	$\frac{1}{3}$	3	$1\frac{2}{3}$

3	2	$1\frac{1}{5}$	$1\frac{1}{2}$
$1\frac{1}{4}$	$\frac{2}{3}$	$\frac{4}{5}$	$1\frac{1}{3}$
$\frac{1}{6}$	1	Free	$\frac{1}{3}$
$\frac{1}{4}$	$\frac{3}{5}$	$\frac{1}{2}$	5

÷

$\frac{2}{5}$	4	$1\frac{1}{4}$	$\frac{1}{6}$
1	$\frac{2}{3}$	Free	$\frac{4}{5}$
$1\frac{1}{2}$	$\frac{1}{4}$	6	3
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{3}$	2

÷

4	$1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$
$\frac{5}{6}$	$\frac{4}{5}$	$\frac{1}{3}$	$\frac{1}{6}$
$\frac{1}{2}$	Free	2	1
3	$\frac{2}{3}$	$1\frac{1}{4}$	$1\frac{2}{3}$

÷

1	3	$\frac{1}{6}$	$\frac{4}{5}$
$\frac{1}{2}$	$\frac{3}{5}$	$\frac{2}{3}$	Free
$2\frac{1}{2}$	$\frac{1}{3}$	$1\frac{1}{2}$	$1\frac{1}{4}$
2	$1\frac{1}{5}$	$\frac{1}{4}$	$1\frac{1}{3}$

÷

$\frac{1}{8}$	$\frac{1}{12}$	$\frac{1}{25}$	$\frac{1}{2}$
$\frac{1}{6}$	$\frac{1}{5}$	$\frac{1}{20}$	$\frac{1}{9}$
$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{16}$	$\frac{1}{15}$
$\frac{1}{30}$	$\frac{1}{36}$	$\frac{1}{24}$	$\frac{1}{18}$

×

$\frac{1}{6}$	$\frac{1}{25}$	$\frac{1}{8}$	$\frac{1}{30}$
$\frac{1}{3}$	$\frac{1}{15}$	$\frac{1}{10}$	$\frac{1}{16}$
$\frac{1}{9}$	$\frac{1}{18}$	$\frac{1}{4}$	$\frac{1}{20}$
$\frac{1}{2}$	$\frac{1}{5}$	$\frac{1}{36}$	$\frac{1}{12}$

×

$\frac{1}{18}$	$\frac{1}{30}$	$\frac{1}{3}$	$\frac{1}{8}$
$\frac{1}{12}$	$\frac{1}{36}$	$\frac{1}{20}$	$\frac{1}{9}$
$\frac{1}{16}$	$\frac{1}{15}$	$\frac{1}{25}$	$\frac{1}{4}$
$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{24}$	$\frac{1}{2}$

×

$\frac{1}{30}$	$\frac{1}{36}$	$\frac{1}{8}$	$\frac{1}{6}$
$\frac{1}{3}$	$\frac{1}{12}$	$\frac{1}{18}$	$\frac{1}{16}$
$\frac{1}{10}$	$\frac{1}{2}$	$\frac{1}{15}$	$\frac{1}{5}$
$\frac{1}{9}$	$\frac{1}{20}$	$\frac{1}{25}$	$\frac{1}{4}$

×

$\frac{1}{6}$	$\frac{1}{20}$	$\frac{1}{5}$	$\frac{1}{9}$
$\frac{1}{24}$	$\frac{1}{25}$	$\frac{1}{4}$	$\frac{1}{3}$
$\frac{1}{16}$	$\frac{1}{12}$	$\frac{1}{36}$	$\frac{1}{15}$
$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{30}$	$\frac{1}{18}$

×

$\frac{1}{6}$	$\frac{1}{15}$	$\frac{1}{36}$	$\frac{1}{8}$
$\frac{1}{2}$	$\frac{1}{16}$	$\frac{1}{10}$	$\frac{1}{4}$
$\frac{1}{20}$	$\frac{1}{30}$	$\frac{1}{3}$	$\frac{1}{9}$
$\frac{1}{5}$	$\frac{1}{25}$	$\frac{1}{12}$	$\frac{1}{18}$

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